The Tanagra Project

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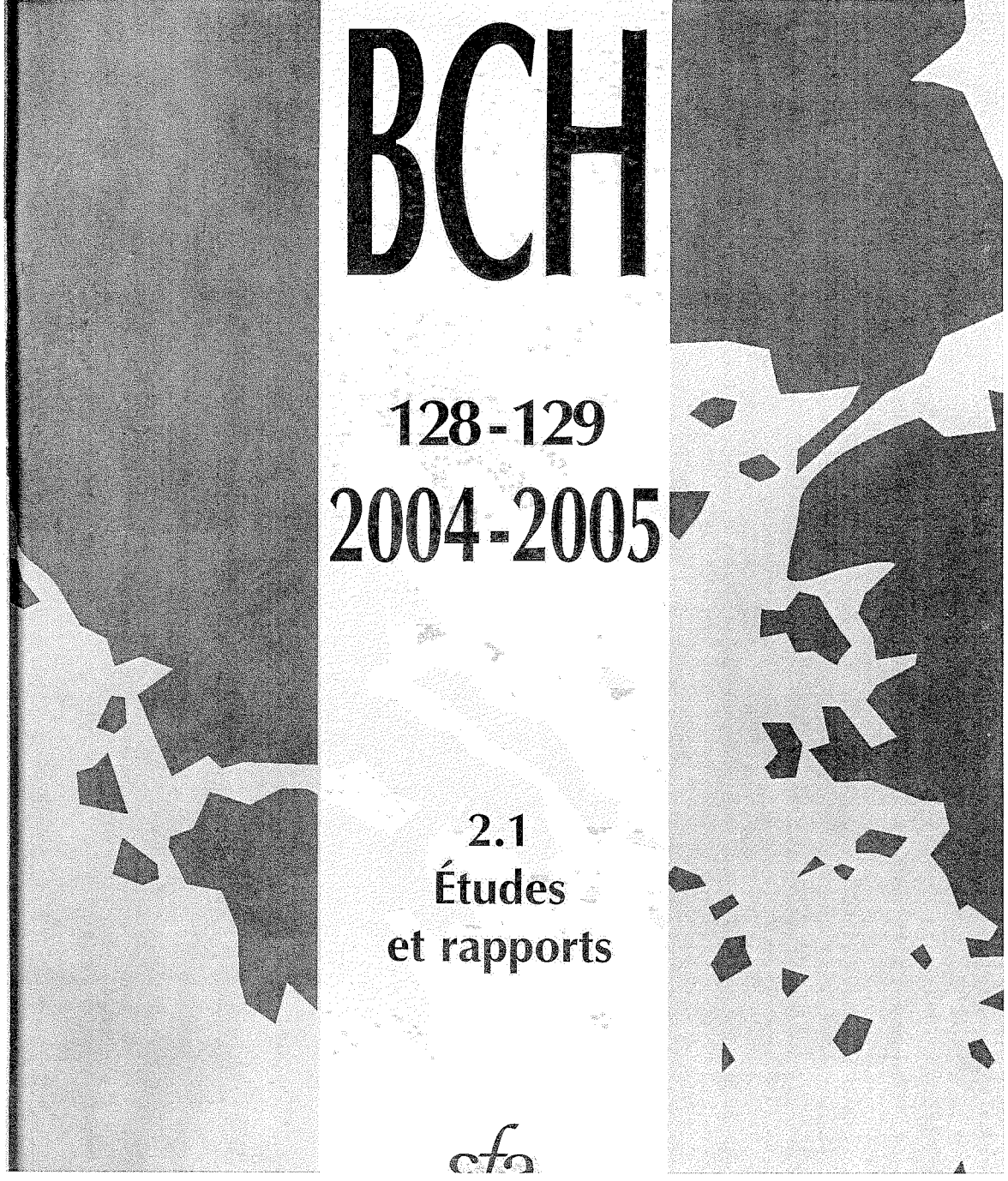


The Tanagra Project: Investigations at an Ancient Boeotian City and in its Countryside (2000-2002)*

by John L. BINTLIFF *et alii*

INTRODUCTION

Between 1978 and 1991 a regional field survey project, the Boeotia Project, directed by John Bintliff (of Bradford and subsequently Durham University) and Anthony Snodgrass (Cambridge University) conducted archaeological surface survey in Central and Northern Boeotia, in the chora and at the ancient polis centres of Thespiae, Haliartos and Hyettos. Following a long series of preliminary reports and articles highlighting particular aspects of this Project's results,[1] the first of a series of final publications is in press.[2]

In 1999 John Bintliff moved to Leiden University and commenced a new project, also within Boeotia, in collaboration with Greek colleagues, the Leiden Ancient Cities of Boeotia Project. The perceived central role of non-destructive Geoprospection techniques

* Bibliographical Abbreviations:

BINTLIFF *et al.* 2000 = J. L. BINTLIFF, E. FARINETTI, K. SBONIAS *et al.*, "The Tanagra Survey. Report on the 2000 Season," *Pharos* 8 (2000), p. 93-127.

BINTLIFF *et al.* 2001 = J. L. BINTLIFF, N. EVELPIDOU, E. FARINETTI *et al.*, "The Leiden Ancient Cities of Boeotia Project. Preliminary Report on the 2001 Season," *Pharos* 9 (2001), p. 33-74.

1. Cf. J. L. BINTLIFF, A. M. SNODGRASS, "The Boeotia Survey, a Preliminary Report: The First Four Years," *JFA* 12 (1985), p. 123-161; *iid.*, "Off-site Pottery Distributions: A Regional and Interregional Perspective," *Current Anthropology* 29 (1988), p. 506-513; *iid.*, "Mediterranean Survey and the City," *Antiquity* 62 (1988), p. 57-71; J. L. BINTLIFF, P. HOWARD, "Studying Needles in Haystack - Surface Survey and the Rural Landscape of Central Greece in Roman Times," *Pharos* 7 (1999), p. 51-91; J. L. BINTLIFF, P. HOWARD, and A. M. SNODGRASS, "The Hidden Landscape of Prehistoric Greece," *JMA* 12.2 (1999), p. 139-168.
2. J. L. BINTLIFF, P. HOWARD, and A. M. SNODGRASS (eds.), *The Boeotia Project, 1. The Leondari South-East and Thespiae South Sectors McDonald Institute Monographs, Cambridge* (in press).

and related surface architectural survey for the study of ancient cities led to an invitation to the University of Ljubljana (Slovenia) to join this new project, so that from 2000 onwards Professor Bozidar Slapšak became Co-Director with John Bintliff.

One major result of the older Boeotia Project had been to make public the immense potential of non-invasive surface study of ancient Greco-Roman towns, where these lay in presently-cultivated fields.[3] It was shown to be very feasible to identify the maximum boundaries of these large and complex settlements, as well as outline the changing sizes of towns at different chronological stages of their biographical trajectories. Given that the total excavation of even a smaller Greek town has never been attempted or achieved, such methods provide an invaluable aid to archaeologists who otherwise have to work with scattered test excavations and historical sources for writing the history of a particular ancient city. Indeed one surprising result of our urban surveys was to show that total surface study of ancient towns gave important new information about their development which was unexpected and contrary to what had been inferred from these previous approaches.

In choosing to continue our work in Boeotia, and in particular to focus on additional city states, we were motivated firstly by the desire to test the conclusions reached at towns already studied, on poleis elsewhere in the region, with the aim being historical generalizations. A secondary and more important aim, however, was to react to a perceived trend in European Archaeology as a whole, away from excavation of important and monumental sites and in the direction of conservation and display, with destructive intervention being reserved for archaeological sites which were at risk from legal and illegal damage. Put simply, Greece and Italy possess an unparalleled density of ancient urban sites which are now likely to be protected from excavation, none of which have been completely dug up. The only way we can gain a reasonably reliable picture of the development of these city sites is through combining the fragmentary evidence from piecemeal excavations and topographic studies at these locations, with in as far as possible a total surface analysis of artifact and architectural evidence combined with non-destructive subsurface analysis using geophysical and geochemical methods. We would argue that in good conditions (cultivated land, or limited surface vegetation), our new approach to complex monumental sites can provide the basis for a thorough understanding of the cultural biography of such towns, assisting their presentation to the regional and tourist public and thereby enhancing their conservation value.

In line with these aims, our new Leiden-Ljubljana Project has devoted most of its fieldwork over one-month summer seasons between 2000 and 2003 to the analysis of the artefactual and architectural remains over the entire surface of the more than 30 hectare walled town at Tanagra. That city was chosen because it represented a district of Boeotia

3. A. M. SNODGRASS, J. L. BINTLIFF, "Surveying Ancient Cities," *Scientific American*, March 1991, p. 88-93.

well distant from those studied by the previous Boeotia Project, lying far in the east along the Attic border. Then an excellent basis for our work had been laid in the 1970s and 1980s through a detailed topographical study of the city by a team led by Professor Duane Roller.[4] Finally, following on destruction of the uppermost part of the town by a water-engineering project in the 1950s, the site had been protected as far as the walled area was concerned as an ancient monument, within which neither non-archaeological or archaeological excavation was permitted.

In the three seasons 2000-2002 our teams completed the gridding of the city surface within the walls, counting and collecting surface artifacts, almost entirely potsherds. In parallel we undertook a highly-detailed mapping of the surface topography using a Total Station, and recorded all visible surface traces of architecture. From 2001 onwards the Slovenian Geoprospection team began the complete subsurface mapping of the intramural area, a process which should be completed during 2004. Although our primary aim was to trace the development of the urban site itself, our previous experience in Boeotia had shown that a complementary understanding of a town's sustaining hinterland or chora was vital to answering questions of demographic, social and economic change. Thus a limited rural survey has been running each summer, to test whether the models of settlement development over time which we have elaborated from the choras of other Boeotia cities, within the framework of the previous Boeotia Project, are also appropriate to the countryside of ancient Tanagra.

The present article will present the results of our 2002 season in and around Tanagra and set them into the context of our research as a whole from 2000 onwards. In 2002 the Leiden-Ljubljana field project at the ancient city of Tanagra in Eastern Boeotia and in its immediate environs continued.[5] In the following, extended report the various specialist sub-teams will present their work from last season, developing from that reported in the previous two seasons in the annual periodical of the Dutch Institute at Athens—*Pharos*.[6]

4. D. ROLLER, "Tanagra Survey Project 1985, The Site of Grimadha," *ABSA* 82 (1987), p. 213-232.

5. With a large team of staff and students from the Netherlands, Belgium, Slovenia and Greece, under the joint directorship of John Bintliff and Božidar Slapšak, and with Kostas Sbonias (Ionian University) as Assistant Director. We are once again greatly indebted to the Ephor of Classical Antiquities at Thebes, Dr. Vassilis Aravantinos, for his enthusiastic support for, and continuing interest in, our work. The Ephor of Byzantine Antiquities, Mrs. Koilakou, has also keenly encouraged our research into the post-Roman era at the site and in its surroundings. The research permits were obtained through the Dutch Institute at Athens, with unfailing support from Gert Jan van Wijngaarden and his staff. Finally our entire season with its up to thirty residents depends absolutely on the bountiful goodwill of the Metropolitan of Levadhia, Bishop Hieronymus, and his personal assistant Mr. George Kopanyas, for allowing us to base ourselves at the Ecclesiastical Research Centre of Evangelistria. A significant part of the Tanagra Project is funded through a Belgian interuniversity initiative (IUAP) coordinated by Prof. Marc Waelkens (University of Leuven).

6. BINTLIFF *et al.* 2000, p. 93-127; BINTLIFF *et al.* 2001, p. 33-74. A separate article has been published in *Pharos* 11 (2004), p. 45-74 by our specialist in ancient sources Professor Albert Schachter, part one of a longer study on the Classical epigraphic and archival data available to help us reconstruct the story of the city, its chora and the life of its inhabitants.

THE URBAN AND RURAL SURFACE SURVEY

John L. BINTLIFF, Emeri FARINETTI, Kostas SBONIAS

In 2002 the surface artefact survey team completed the grid collection of the intramural area of ancient Tanagra city (**fig. 1**). All but a very small area in the far south of the town has now been gridded, this being a zone of destruction and modern construction consequent on the cutting of an aqueduct through the highest point of the city in the 1950s.[7] As in the two previous seasons the standard grid size was a 50 × 50 m², and as in the 2001 season these basic units were subdivided into four quadrats each 25 m a side for closer control on the ceramic and architectural remains encountered. A total of 124 larger grid units was finally required to complete the urban ceramic survey. In each grid unit estimates of surface ceramic density were calculated and then corrected for the degree of vegetative cover, allowing us to compare surface densities both across the city (**fig. 2**) and with other Boeotian urban sites similarly studied during the previous Cambridge-Bradford-Durham Boeotia Project. Considering the fact that the city is now protected from agriculture and only kept from reversion to scrub through modest-level sheep-grazing, so that a continuous low vegetation typifies the city surface, the recorded densities of surface pottery remain impressive. Zones of lesser density in the south and southwest of the city can largely be accounted for through colluvial wash and, before visibility-correction, the increased height and density of surface plants. As the densities testify, our decision to limit collecting to one to two hundred pieces at the most per subunit was essential! The average density across the city as a whole is 5 per square metre (visibility corrected—which means multiplying up the observed artifact density by a factor corresponding to the percentage of vegetation concealing the soil surface), which means 12,500 per 50 m² grid unit.

During the counting and collecting of surface ceramic the same team noted the presence, general nature and alignment of stone building debris, and architectural fragments, to supplement the locating with high precision of wall lines and large building pieces noted by the Total Station mapping team led by Emeri Farinetti. During the 2002 field season, this latter team continued the intensive mapping of the morphology of the city surface and the careful recording of all the architectural features visible. The total area covered by the Total Station team so far during the three survey seasons, is 195,000 m².[8]

7. Cf. D. ROLLER, *loc. cit.* (*supra*, n. 4).
8. For the methodology employed cf. BINTLIFF *et al.* 2000; E. FARINETTI, L. SIGALOS, "Detailed Topography and Surface Survey. What is the point? Tanagra City Survey 2000," in G. BURENHULT (ed.), *Archaeological Informatics: Pushing the Envelope CAA 2001 – Proceedings of the 29th Conference, Gotland, April 2001, BAR Int. Series* 1016 (2002), p. 385-391.

In 2003 a small architectural team directed by Božidar Slapšak began to integrate the observations of this nature with close inspection of all such remains, square by square, to compare the patterning observed with the ongoing geoprospection work, which provides us with a total groundplan of the streets and building blocks of the Greco-Roman town through non-destructive subsurface detection. The GIS data integration of architecture, topography and artefacts, as well as the database management are carried out by Emeri Farinetti.

In previous seasons we had undertaken test transects of 100-200 m width out from the city into its dependent countryside, to the west, north and east sides of the city, and for distances of one to two kilometers. Our aim was to identify both sites (settlements, cemeteries, shrines and other foci of intensive past human activity), and traces of "offsite archaeology"—especially manuring scatters shown in other landscapes of Boeotia to be the result of intensive ancient farming practices.[9] In 2002 we continued our test exploration of the chora of Tanagra with a long transect to its south (**fig. 3**). The total distance of the formal intensive transect was 2000 metres, but at this point the team found itself a third of the way up a prominent regional landmark hill, and it was decided to make extensive survey of the upper slopes and summit of that hill (here shown as outlined large areas south of the intensive transect). Whereas in the intensive transect we counted surface ceramic density and collected a continuous sample of pottery for dating purposes, the extensive sectors to the south had a much smaller ceramic sample and were designed primarily to identify sites.

The density pattern visible in the intensive transect of 2 kms length (**fig. 3**) showed two predictable features. Firstly the densities declined progressively as we moved further from the city, especially after the first kilometre. The terrain was one of rolling hills, with regular small streams running NW-SE from the higher hills to the west down through our transect to the valley floor of the river Asopus, which runs parallel to the transect to its east and flows in a SW to NE direction (**fig. 4**). We interpret these overall surface trends as resultant from urban manuring, with a steeper and earlier falloff than in our other transects being related to the more difficult logistics of travelling across this terrain with heavy loads of urban organic and inorganic debris. Nonetheless even in the extensive transects some two and a half kilometres distant from the city, a continuous but by now thin scatter of ancient worn sherds testifies to an effort to bring smaller quantities of refuse to the outer chora.

The other predicted result from our south transect was the discovery of a similar site pattern to that revealed in the 2000-2001 transects: regular small Classical Greek cemeteries,

9. J. L. BINTLIFF, P. HOWARD and A. M. SNODGRASS, *loc. cit.* (*supra*, n. 1).

dispersed Classical Greek farms, and larger Roman villa sites. As can be seen in the following figure (**fig. 5**) Classical Greek cemeteries were located at several different points of the long intensive transect (TS6, 8, 10 and 13). None of them lay on natural routes, and their location is far more suited to a combination of positioning on family estates, not far from farms in some cases, and a localized viewpoint from which the markers might be seen within their immediate localities at least and, in imagination, the dead look out over familiar fields. This reinforces the conclusions about the rural cemeteries voiced in our second report in *Pharos*.[10] Once again, the density of such cemeteries—even allowing for the likelihood that many such small scatters of fineware remain invisible—is notable, and we feel that this heightened recovery by our team is in part the result of late 19th century tomb-robbing leaving surface broken sherd material in the ploughsoil to make our task of cemetery recognition that much easier.

As in the other transects, Classical Greek cemeteries occur from the immediate extramural zone far out into the landscape, but contemporary farms normally begin after a kilometre or so. This probably shows that the tombs could mark estates even if the family unit represented dwelt only in the city, and that living in the countryside was more worthwhile at some distance away from town, since commuting from less than a kilometre was easy enough for city-dwellers. In any case four definite small Classical Greek farms of the familiar "family farm" type were recognized (TS11, 12, 17 and 16), all on rolling fertile marl country ideal for intercultivation of olives and cereals. A further possible example at TS7 needs clarification from ceramic and distributional studies.

On the evidence of the transect, Roman rural settlement would surprisingly seem to have been absent from this sector of the countryside of Tanagra, yet in fact that inference leads rather to an insight into the dangers of sampling strategies. Our thin transect of 150 m width was not merely a narrow slice of testing the district, but it also ran across the upper slopes of the Asopus Valley at a relatively fixed height, through a particular type of landscape and land use type. Immediately below and to its east were more gently sloping surfaces running into the Asopus floodplain, today given over to cereals, vines and vegetables. In our earlier survey studies in the chora of Thespiae, we observed that the natural olive and cereal lands of the hill slopes were typical locations for Classical family farms, whilst Roman villas favoured valley floor or plain-edge locations. Absolutely on cue, a suspicious trail of Roman finds, not in itself of site level density, observed within our transect, lured us off the official path to adjacent fields lower down, where site TS9 was identified as a very large villa site on and into the river floodplain. In 2003 the south transect was widened to see if further sites lay in this lower topographic and land use zone, but no further Roman sites emerged, although the provisional size of TS9—100 m or more

10. BINTLIFF *et al.* 2000.

E-W—could give it a territorial potential to have exploited a large part of this side of the valley, replacing many smaller Greek farms of earlier times.

From our other transects, and from knowledge accrued in our earlier surveys in Boeotia, we expected Medieval and Postmedieval settlements to be rare and regularly dispersed across the countryside in a nucleated hamlet-village system, very different to the farm and villa landscapes of antiquity. One significant Medieval site was indeed identified on and around a rebuilt chapel in the far southeast of our rural area, in the extensive sectors (site TS15). This is currently under study by our medieval specialist Athanasios Vionis.

However, much the most interesting and important result of the south transect emerged from its least substantial finds. We have published elsewhere our views on the significance of small groups of worn prehistoric sherds as marking vestigial settlement and burial sites.[11] Those observations were made especially as regards the coarsewares of Bronze Age date which seem to typify small rural sites of that period in much of Mainland Greece. However we also predicted that the situation would be both similar, but in another way contrasted, in the case of prehistoric periods or wares with a higher quality of production. In the 2002 transect we encountered a neat example of this phenomenon. Alerted by our hypotheses to the importance of finding prehistoric surface sherds in ones or twos, we carefully plotted their occurrence as they emerged from amongst the more abundant pieces of historic age in the sample collections brought home from each subunit of the intensive transect. The following figure displays these data (**fig. 6**). It is important to note that each of these findspots represented only 1-2 prehistoric sherds found by a single student within a fieldwalking unit of 100 × <20 metres, and normally field surveyors would dismiss such low occurrences as offsite activity requiring no further research. In our case however we have hypothesized that small rural farm or burial sites of the Bronze or Neolithic periods in rich and heavily cultivated land are likely to survive only as tiny vestigial deposits, whose surface manifestations would be exactly of this feeble order of magnitude. For this reason we asked our prehistoric ceramic specialist Kalliope Sarri to revisit these spot locations, and through intensive "hoovering" of the ground, test whether there might be more prehistoric material at these locations to the highly trained eye, which can ignore the vastly numerically-dominant offsite manuring sherds of Greco-Roman age.

The results dramatically confirmed our model. Near Transect 90, in 97, 103 and 107 clear further finds were made, sufficiently extensive to prove the existence of rural settlement sites, all of Neolithic date (respectively sites TS7, 11 [a separate spread from a Classical farm at the same locality], 17, 13 and 14). The site in Tr. 103 (TS17) is perhaps large enough to be seen as a hamlet, whereas those near 90 (TS7), in 97 (TS11)

11. Cf. J. L. BINTLIFF, P. HOWARD and A. M. SNODGRASS, *loc. cit.* (*supra*, n. 1).

and 107 (TS13) appear more as vestigial farms. The site TS14 is a very unusual site — it is perched on the top of a cone-like and very steep hill, with cultivable land of poor quality on one side, a dangerous cliff on the other. It is a limited area of finds, and this might perhaps be a refuge and/or ritual focus, or burial location rather than a domestic location.

A final point needs to be made—and that concerns the quality of the Neolithic ware which characterizes all these prehistoric locations. As elsewhere in Greece the ceramic is very well made and hard, so that it survives in large fragments. Any painting will have gone, but careful examination in the laboratory shows that most were hand burnished. Nonetheless in the field these large plainware domestic sherds appear no different from the equally hard and large sherds of Greco-Roman types into whose midst they occur as extremely rare leavening, and hardly any were recognized in fact as prehistoric at the time of their collection. The practice of continuous collection of varied fabrics and shapes is clearly a vital necessity for modern survey, since certain periods will only be represented by not striving to limit samples to clearly diagnostic sherds. In this case the fine production quality ensured that the Neolithic sherds were big, but their small numbers—even after hoovering by experts—underlines the taphonomic fact that subsurface settlement or burial deposits of such remote age in rich farming land will by now be limited to thin pockets of a few artifacts. A final point we might make is that such a method of revisiting the findspots of 1-2 pieces was almost never practiced in our earlier Boeotia survey project, and thus it is more than likely that a very large number of prehistoric small rural sites was missed by that earlier programme.[12] We have drawn attention to the revealing fact that some half of the rural sites of Greco-Roman age discovered in an earlier survey of the south chora of ancient Thespiae city, when gridded, turned up small quantities of prehistoric pottery and lithics. Rather than evidencing a striking coincidence of locational preferences, since many of these places are far from unique in their districts, we have argued that it was instead the close focusing of fieldwalkers' attention on small gridded areas, the result of their dense historic sherd concentrations, that opened our eyes to the otherwise all but invisible low density prehistoric scatters which are probably spread continuously across the entire fertile zones of the chora.

If we leave out of consideration the enigmatic hilltop site of TS14, the location of three of the remaining Neolithic rural sites is a very striking and uniform one, surely not by chance but reflecting a clear topographic choice. TS7, 11 and 17 all lie on the north slope of small, permanent flowing streams which here emerge from more rugged hills in the west to run steeply into the Asopos floodplain to the east. Although we await further details from Kalliope Sarri as to the likely age within the Neolithic of these finds, for most of that long era cultivation favoured moist areas due to a reliance on

12. *Ibid.*

hand and hoe cultivation, and was closer to gardening than modern extensive plough agriculture.[13] The south-facing locations might also have been chosen to take advantage of winter insolation. Significantly each small valley which we crossed has a Neolithic settlement in this location.

The following series of figures represents the sherd densities at a number of the 200 rural sites which were gridded. All basic densities are corrected for visibility obscuring and for some we have also set them against the density of the surrounding transects. In the latter cases we have divided the gridded density figures by a factor of 2.5, to allow for the greater intensity of inspection which occurs during gridding as opposed to regular fieldwalking. This operation should bring the density counts on- and off-site in closer counting conditions to allow real comparability and allow us to see how the sites rise out their background.

- Site TS7 is a complex site on steep ground by a stream and with both prehistoric and Greco-Roman components. **Figures 7-8** show the site with its 20 × 20 m grid, firstly as a visibility-corrected density, then with the 2.5 correction and set against the associated fieldwalking transects. The relatively high on and off site counts reflect the nearness to the city (only some 700 m to the north) and thus a high level of manuring material running through the area. We would normally aim to grid a site to a point where the density values merge into the surrounding offsite levels, and it can be seen on **fig. 8** that there is, after the 2.5 correction, a good match on the west and north site periphery. If we take the squares with clearly higher figures, a site of some 2800 sqm emerges, but this does include two widely-separated chronological phases of occupation which probably do not overlap precisely. Nonetheless, since "family farms" typically recovered in Mainland Greek surveys tend to be >1-3000 sqm, the site fits well into expectation for such establishments.
- Site TS11 has many points in common with TS7, in that it seems to represent a sloping site above a stream, with both a prehistoric and Classical Greek domestic site. Here the two components appeared to be overlapping very little during field collection. **Figures 9-10** once more show visibility-corrected grid densities and then the 2.5 corrected grid set against background transects (note the grid is here 10 × 10 m). Being a further 500 m distant from the city, we can see a very dramatic decline in offsite manuring ceramics, but also with the 2.5 division we see that several grids are already in background levels. Many others are not clearly distinguishable from a variable background. In fact the clearest elevated site zone is a single grid with 6500 density per hectare in the west, associated with another two at more than 4000. Here lay the core of the Classical farm. The prehistoric site was more focused in the easterly grids, which were not elevated above higher background squares. On the other hand, around the Classical Greek high grid squares were three with figures unusual for their

13. Cf. A. SHERRATT, "Water, Soil and Seasonality in Early Cereal Cultivation," *World Archaeology* 11 (1980), p. 313-330. In 2005 these sites were dated to the Late Neolithic era. See now J. L. BINTLIFF *et al.*, "Landscape and Early Farming Settlement Dynamics in Central Greece," *Geoarchaeology* 20 (2005), p. 135-147 ; E. FARINETTI, K. SARRI, K. SBONIAS, "Η ανάγνωση του προϊστορικού τοπίου στην χώρα μίας ελληνορωμαϊκής πόλης. Η περίπτωση της αρχαίας Τανάγρας Βοιωτίας," in *Αρχαιολογικό έργο Θεσσαλίας και Στερεάς Ελλάδας* 1 (2006), p. 579-592.

immediate offsite surroundings (this is the top of a slope) but not for offsite further downhill to the east. Provisionally we might outline the Greek farm as occupying some 6 grid units or 600 sqm, with the prehistoric scatter to its east low enough in surviving density not to create a clear rise in localized figures above the level of the typical ancient manuring density in this part of the site. Another family farm seems indicated, probably for both occupation eras.

- Site TS12 (**figs. 11-12**) lies just across a small stream from TS11, but otherwise in a very similar topographic location. Here there is only a classical farmsite. With the 2.5 factor correction we can see that the outer grids merge satisfactorily into local background density, also that the latter is at similar levels to the surroundings of TS11. For unclear reasons, probably taphonomic and agricultural, this farm, although very similar in surface dimensions (some 5-6 grids of 10 × 10 m above background densities, ie 500-600 m site area), has more elevated peaks.
- Site TS13 (**figs. 13-14**) is a dramatic location, a plateau facing north across the Asopos valley and hillslopes towards ancient Tanagra, and is essentially a small Classical cemetery site with a low addition of prehistoric activity deemed at site level by Kalliope Sarri. The 2.5 corrected grid shows some 5 squares clearly above local density variation, with just two core ones at particularly high values. Part of the site to the east remains unsampled, to judge by the shape of the site in the other cardinal directions, so that provisionally it might form in total 8-10 grid squares or 800-1000 m^2 in area. The denseness should reflect the cemetery, which is much disturbed by ploughing in an orchard of young olives, as normally such rural cemeteries are not numerically outstanding from background. On the other hand at this great distance from the city, some two kilometers, offsite is relatively low.
- Site TS17 (**figs. 15-16**) is a larger and more complex site, dealt with in the final days of the survey, and lies on a gently sloping south-inclining slope beside a major E-W tributary of the river Asopos. From the 2.5 corrected density plot we can see that the site barely overlaps at all with the field transects to its east, and that there is a dramatic jump in values as we enter the site grid. Moroever the edges of the site are not clearly met with in any grid values, although at many points a clear drop towards the grid peripheries can be seen (except in the S where two of the three highest grid units lie). Our impression then is of a site already of substantial size—at least 3400 sqms and more to come. It appears to be essentially a Greco-Roman site, with the prehistoric widespread but never dense enough to be recognized as a site from numbers alone. The initial impression from the field team was of an Archaic-Classical site, perhaps with more than a domestic function (sanctuary?), but we shall have to wait for Vladimir Stissi's sober evaluation at a later date. We are sufficiently far away from the city for some small focus to be expected for the outlying farms.
- Site TS16 (**fig. 17**) lies in an area without offsite transects, so we have only the grid values visibility-corrected, lacking 2.5 factor correction. The site has a core of high values some 7 units large, ie some 700 sqms, but we can note that the background here is very high for such a distance from the city, and indeed the finds were of most periods, perhaps with a core of a classical (-Roman?) farm, but with much intermingled halo or site-edge impact from the deserted medieval hamlet discovered very close by at site TS15. Disentangling the putative ancient farmstead from this dense scatter was clearly problematic at the time of sampling, and we will probably have to await careful ceramic study of the samples before venturing further into interpretation of this location.

PRELIMINARY NOTES ON THE PREHISTORIC POTTERY

Kalliope SARRI

A prehistoric presence in the wider area of Tanagra was expected, since previous research projects, excavations and extended surveys had already localised a number of prehistoric sites on the east slopes of the mount Soros and in the Asopos Valley.[14] Excavations carried out by the Greek Archaeological Society during the 70's revealed two extended Mycenaean cemeteries on the slopes of low hills, at the sites Gephyra and Dendro, placed 400 and 700 m east of Bratsi, the modern village of Tanagra. The c. 250 chamber tombs yielded a considerable amount of important grave offerings, LH II and IIIB1 pottery but also the famous clay larnakes, a unique iconographic complex linking the local grave customs and the artistic traditions with those of Minoan Crete.[15]

After these long and intensive investigations, the Tanagra district came to be considered as one of the most important Mycenaean centres of the Mainland, although a major Mycenaean settlement associated with the cemeteries has never been localized. Late Helladic settlement remains have however been found during the 70's at the site of Dendro, where a large rectangular building with LH IIIB2 pottery was uncovered.[16] The excavator located this Mycenaean settlement but he also pointed to a second one on Kastro, a hill next to the edge of the modern village of Tanagra. These two sites are located close enough to the cemeteries—and about 5 km distance from the ancient town—so that this suggestion seems to be reasonable. Therefore the localization of a major Mycenaean settlement at the city site itself, could not be expected as an aim for the Tanagra survey project. Our expectation was rather the opportunity to reexamine the relation of the known prehistoric sites to the Classical town, and in view of the expected new surface finds on and around the Classical city, to create an expanded picture of the prehistoric habitation between these two important areas.

Prehistoric finds in the city

From the very beginning of our work at Tanagra, during the 2000 season, the collection of a few but easily diagnostic prehistoric sherds—spread across different areas of the central city ridge or acropolis—allowed us to realise that the remains of the Classical town

14. D. H. FRENCH, *Prehistoric Pottery Groups from Central Greece* (1972); R. HOPE-SIMPSON, O. T. P. K. DICKINSON, *A Gazetteer of Aegean Civilization. The Mainland and Islands* (1979), p. 222; J. FOSSEY, *Topography and Population of Ancient Boiotia* (1988), p. 45-57; P. W. WALLACE, *Strabo's Description of Boiotia. A Commentary* (1979), p. 42.
15. Th. SPYROPOULOS, *Prakt* 1970, p. 29-36; 1973, p. 11-21; 1974, p. 9-33; 1975, p. 415-427; 1977, p. 25-31; 1979, p. 27-36; *id., AAA* (1969), p. 184-197.
16. Th. SPYROPOULOS, *Prakt* 1974, p. 9-33.

were covering prehistoric phases (**fig. 18**).[17] These samples appear very sparse in comparison to the Greco-Roman finds, but they seem to cover both the Neolithic and Bronze Ages. The largest concentrations of prehistoric material were observed to on the Acropolis ridge and on the SE ridge slopes, indicating the existence of a small settlement in the deeper levels on the ridge, which is being slowly uncovered by site erosion. Although the prehistoric finds form a limited group, their density is noteworthy, especially if we consider that the prehistoric horizons have been covered by thick later strata with very intensive building activity.[18]

The largest proportion of the prehistoric pottery—as is to be expected in intensive surveys—consists of small-sized, badly preserved sherds of coarse household pottery, which can be dated only roughly. Consequently, as chronological criteria we used construction features observed by the naked eye, such as modes of shaping, inclusion types, burnishing techniques, colour or hardness, which—according to comparative material—vary or undergo specific technological tendencies within the prehistoric period. Samples of the prehistoric ware groups were classified in a reference collection, in order to enable direct comparisons—mainly with the later coarse and medium coarse wares of the site—and limit as far as possible the numbers of undiagnostic sherds. In this way the prehistoric pottery groups could be consistently localised and recognised, and then compared with the rest of the survey material dated by other ceramic specialists.[19] Amongst this broadly diagnostic material, there stands out a small group of chronologically better defined sherds, representing wares and pot shapes well known from excavated Boeotian sites, such as Thebes, Eutresis, Orchomenos and Chaeronea.[20] These examples offer useful chronological links, as well as helping to shed light on the prehistoric sequence of Grimada/Classical Tanagra.

We can begin our discussion of the prehistoric sequence within the city by noting that among the collected material there are some samples of Neolithic pottery—and moreover at a higher percentage than for the succeeding individual prehistoric periods (**fig. 19**). Dating the Neolithic surface finds in Boeotia seems to be very difficult, compared to other regions, for the reason that well-stratified comparative material is still missing, whilst there has yet to be created a firm chronological sequence for the Neolithic era within this region. In addition to that, our Neolithic material was difficult to define

17. BINTLIFF *et al.* 2000, p. 94-103.
18. For the low visibility of the prehistoric finds, see J. L. BINTLIFF, P. HOWARD and A. M. SNODGRASS, *loc. cit.* (*supra*, n. 1).
19. I thank my collegues J. Poblome, V. Stissi, A. Vionis and J. Vroom for many discussions on the dating of the undiagnostic sherds.
20. H. GOLDMANN, *Excavations at Eutresis in Boeotia* (1931); E. KUNZE, *Orchomenos, III. Die Keramik der frühen Bronzezeit* (1934); D. KONSOLA, *Προϊστορική Θήβα* (1981).

closer, since it mainly consists of very small, undecorated, coarse ware sherds. So the dating had to be based here again, on technological features. Within the "Neolithic" we classified handmade, very well burnished and hard fired pottery, made of gritty clay, rich in stone—often large white—inclusions (**fig. 20**). The surface colour of this pottery varies from dark brown to dark grey and only one example showed traces of bright-red decoration on a light brown surface. A single light-brown sherd shows an interesting surface treatment: it is carefully burnished with many, vertical movements giving the surface a slight decorative effect. The general appearance of the Neolithic pottery group corresponds to the coarse neolithic wares known from other Boeotian sites, such as Chaeronia, Elateia and Orchomenos, which have been dated to the Middle and Late Neolithic periods.

The Bronze Age material from the town is much better definable, since older museum collections as well as the material from recently excavated Boeotian sites offer a better view of pottery production in the Bronze Age. These phases are represented by only a handful of fine wares for each period, although these do provide some reliable evidence for the chronological sequence at Tanagra. The majority once more is represented by the coarse and semi-coarse wares, which, in terms of chronology, can easily be distinguished from the Neolithic pottery, but they also could belong to any of the three main Bronze Age periods. So in our dating statistics such coarse wares were roughly classified as "Bronze Age" finds. Remarks on the general shape or use, the burnishing and tempering techniques or the firing conditions are expected to be useful for later studies on the local pottery production. This ware group shows a remarkable density on the SE ridge slope, showing the main focal area of the Bronze Age settlement (**figs. 18, 21, 23, 26**).

- Only three sherds could be certainly assigned to the *Early Helladic II and III periods*, all belonging to a clearly diagnostic local pottery group, the "Urfirnis" ware, which is often found in large amounts in the major Boeotian EH sites (**fig. 21**). All three samples represent different shapes and decoration varieties: a rim fragment of a very fine askos is coated with dark grey slip, a body sherd of a brown coated tankard shows incised decoration, and a spout-rim fragment of a sauceboat is coated with red slip (**fig. 22**). Although this ware group is small, it could represent the pottery production of an important EH site, since this ware is not usually found at small satellite sites.[21]
- The diagnostic samples of *Middle Helladic pottery* from the town are significantly more numerous (**fig. 23**). They belong to the characteristic Boeotian grey and yellow Minyan ring-stemmed goblets, from bowls and kantharoi (**fig. 24a-b**).[22] A miniature kantharos fragment belongs to a local semi-coarse ware. Matt-painted ware is only represented by a body

21. This observation was made in the Boiotia survey project (pers. communication with O. Dickinson).
22. D. KONSOLA, "Preliminary Remarks on the Middle Helladic Pottery from Thebes." *Hydra* 1 (1985), p. 11-18.

sherd with badly preserved bichrome decoration, a variety usually found in late MH levels and in grave complexes of the MH III-LHI period.[23] A small number of sherds could also belong to Matt-painted ware of the Aigina-type, but their classification is not totally secure, since they come from undecorated vase parts. Also to be classified in the Middle Helladic period perhaps is a large rim fragment of a pithos and some other smaller storage vases with a burnishing technique similar to Minyan ware.

- Samples of *Mycenaean pottery* are few, but represent good diagnostic body sherds from open vases, decorated with red or brown lustrous paint (**fig. 25**). The simple horizontal band decoration cannot supply us with a precise dating, but it seems that these finds come from a settlement level dated from the LH IIIA1 to IIIB2 period. The low density of Mycenaean pottery in the city indicates that Grimada was inhabited during the Late Helladic period but it was probably not the largest and most important Mycenaean centre of the area (**fig. 26**).

Prehistoric finds from the Transects

In view of the difficulty of detecting prehistoric sites in the rural transects area, the team applied a collection system that was followed up by targeted revisiting, designed to enhance the localization of small prehistoric sites, and carried out by the ceramic specialists. In this way dating problems were confronted and clarified in the field and we were finally able to localize a series of new prehistoric sites, mainly in the area in the SW of the town, where the 2002 transects lay, but also a few others in the NE, within transects surveyed in earlier seasons. In the 2002 transects, all of the prehistoric findspots belong to the Neolithic period (**fig. 28**).

The locations of these sites allows us to observe a clear tendency for settlement next to the main Asopos River and beside the small valleys formed by many tributaries and streams which run eastwards into that river, thus representing a classic Neolithic settlement pattern. The surface finds from these settlement areas were neolithic coarse wares and obsidian blades and cores, often mixed with later material. One of these sites (site TS14) is exceptionally located on the top of a high, naturally fortified rocky hill. No later material was found in the same area, indicating that this remarkable site was never reoccupied after the Neolithic period.

23. S. DIETZ, *The Argolid at the Transition to the Mycenaean Age* (1991), p. 218-223.

Preliminary results

We can now conclude that the remains of the prehistoric period in Tanagra indicate that the Classical town was built on the remains of a Bronze Age settlement, which was established in turn on a Neolithic substratum. The low numbers of Mycenaean finds collected within the city and their extreme rarity in the surrounding rural and off site area, indicate that Grimada can never have been the most important Mycenaean centre of the Tanagraike. Our recent results favour, as has already been suggested by many scholars, a location for the Mycenaean settlement associated with the well-known excavated cemeteries some 5 km to the West, near Bratsi, the modern village now renamed Tanagra (**fig. 27**).

The Neolithic and Bronze Age evidence attested on the Classical city acropolis, has a rather closer relationship to a series of previously-known prehistoric sites, located on the S side of the Asopos valley (Klidhi, Kokali, Agios Konstantinos and Liatani). Our work in the transects has also added a number of new Neolithic sites to this area, showing a habitation pattern clearly defined by the approximity to water sources.

In terms of methodology, during these three survey and study seasons, we were many times able to test and evaluate the significance of limited prehistoric sample collections, which often enabled the localization of small sites, revealing a more accurate picture of the local settlement pattern.

Functional Analysis

The general repertory of shapes of the city material give us a first view on the use of pottery but also of the character of the prehistoric settlements. Our function analysis charts show that pottery was used primarily for beverages and not for food consumption, an observation fitting well with our picture of prehistoric eating and drinking habits (**fig. 29**). Most of the diagnostic "table wares" belong to drinking and pouring vessels, such as cups, deep bowls and jugs, whilst the large open vessels, used for food consumption, count for just a few examples. Cooking pots—classified from their secondarily fired surfaces—make a rather small group, and storage jars form an expected, remarkable percentage. As seen in the ware distributions, a great part of the undiagnostic shapes could also belong to storage vessels, coming from very small coarse sherds. Although the material is limited so far, we can observe the presence of table wares and storage vessels in nearly equal percentages, a fact which perhaps gives an "urban" outline to the prehistoric habitation.

THE CLASSICAL POTTERY

Vladimir STISSI

General results

After the establishment of some basic facts and problems in 2000 and 2001, the 2002 season was used to start a more detailed in depth study of pottery from both the city and the transects in its surroundings. Starting from the results in the earlier seasons, and partly relying on reference material from extramural sites with a limited period of use, it has now been possible to distinguish some characteristic and roughly dateable fabrics, and to determine a larger percentage of apparently undiagnostic fragments. Comparing results with the new Roman pottery team has moreover brought some clarity in the transition from Hellenistic to Roman, which, however remains somewhat muddy (see the contribution by Poblome *et al.*).

The various refinements in understanding the material have been applied in several ways. First of all, the finds from the city squares, which had been rather quickly looked at in the first years, are now being studied in more detail. Although this process is time consuming and is still far from completed, the first results (based on 42 of 124 squares) concerning the Early Iron Age and the Archaic, Classical and Hellenistic periods are clear enough (**fig. 30**). The general patterns found before and presented in our previous report remain valid.[24] There is still hardly any material that certainly or probably belongs to the Early Iron Age or the Archaic Period. Likely 5th century sherds are only slightly less rare. Perhaps the consistent numbers of worn bits of indefinite apparently Classical/Hellenistic sherds hide some earlier material, but if the proportions of diagnostic material are indicative, this cannot be very much. The numbers of really diagnostic finds rise to significant numbers only from the fourth century onwards. As the mostly rather basic material can rarely be dated very precisely, chronological statistics would not be worth much, but no gaps are evident, and the small number of well-dateable sherds suggests that the spread of finds over the late Classical and Hellenistic periods is more or less even. The geographical spread of the finds is equally hard to grasp. In the small, mainly rather peripherical part of the city now studied, the frequency of Classical-Hellenistic pottery seems mainly related to the total quantity of sherds retrieved in a square. There is a thin scatter of Classical-Hellenistic everywhere, but most squares have yielded few items (less than 30, excluding finds probably dating after 150 BC), with only 9 out of 42 reaching above 30. It can be noted, moreover, that generally "rich" squares also seem to yield more and better preserved Classical-Hellenistic material than squares with fewer and generally coarser total finds.

24. BINTLIFF *et al.* 2001.

Some new results nicely fit these previously recognized patterns. Perhaps most important is that a closer study of finds from two apparently Hellenistic (but perhaps also slightly earlier) probable farmstead sites (see below) has made it easier to recognize Classical and Hellenistic coarse and cooking wares in the city as well. The rougher fabrics functionally accompanying black and red gloss fine wares are indeed there in the city, albeit still in curiously small quantities. A few recognizable but barely diagnostic groups of cooking wares and fragments of amphorae and smaller closed vessels which do not appear to be Roman and cannot be traced in the extramural material might have to be added, but for the moment conclusive evidence for dating these items is lacking. In any case, the total numbers of Classical-Hellenistic material are still far below those for the Early and Late Roman periods.

Finally, a word on the fabrics which have now been recognized. Almost all fine wares of the Classical and Hellenistic periods seem to belong to one of three overlapping groups of fabrics, which in their turn seem to be variations of a single type of clay, a typical Greek secondary red clay containing some lime but otherwise rather pure (or well-refined). Differentiation is based on a combination of the grade of purity and fineness with conditions and temperature of firing. The lowest quality is a very soft, light-brownish orange fabric, perhaps fired at low temperatures, and usually covered with (worn) red gloss; a much harder gray fabric, obviously a result of reduced firing, occurs with generally more distinctive shapes, and a better preserved gloss. The purest and hardest fabric, mostly covered with a resistant shiny (red and/or black) gloss is dark orange, but sometimes includes dark gray layers, associating it with the all-gray fabric. A small number of very well finished black and red gloss fragments of elaborate open shapes is made of this fabric, which can also be found with cups decorated with black floral patterns found in cemetery remains outside the city. Interesting, all three fabric varieties seem to originate in the 5th century at the latest, with a few possible Archaic fragments suggesting they go further back still. They all continue well into the Hellenistic period, with the soft orange variety even surviving into Roman. It is clear that the combination of the three covered the whole range of local domestic fine wares, soft orange covering the commonest vessels, gray the better quality and hard orange the best. Funerary material from outside the city seems to fit in as well, but further study is needed to confirm this. It would also be worthwhile to compare the range of fabrics sketched here with previous geographical attributions of fabrics of decorated Boeotian funerary pottery. The clear and undisputable find spots of the Tanagra survey material and the relative rarity of fabrics which cannot be associated with those just mentioned may finally give some conclusive evidence long needed.

Coverage of coarse wares is not yet as complete as that of the fine wares. A few characteristic fabrics can be recognized, however, mainly through material from site TS1 (see below). Most notable are: a very brittle soft cooking fabric, often combining gray and orange, and usually with a thin surface finish or layer, which is easily worn or washed off;

a soft buff fabric with an orange core, used for amphorae and large closed pots, which is rather rare; and a dark red rough tile fabric with a great number of inclusions of all kinds, which is found both in the city and around it. Despite considerable variation in colour and density, this fabric is very easy to recognise.

Transects

In addition to work on the city pottery, a quick look at the material from the transects outside the city was started during a short visit to Boeotia in autumn. The outcome confirms what could already be noted during processing of these finds by our students, and has been partially reported already. The very worn off-site finds collected outside the city mainly consists of a dense "background noise" composed of two separate groups of material, which cannot always be distinguished due to the battered state of the usually small bits; items certainly not belonging to one of these categories are very rare however. The largest group is that consisting of Classical-Hellenistic material, mainly recognisable through abraded fine wares and tiles, although cooking wares and coarse pottery are present as well; the second, slightly smaller group is formed by Roman to Late Roman fragments (perhaps rather the latter), most easily recognized by the present of combed sherds, but some fine wares, bits of lamp, tile and cooking wares do go along with those. Both groups clearly consist of domestic debris, showing parallels with city material. Its very worn and fragmentary state is best explained by assuming it was spread out as manure, following the well-known but disputed "manure" hypothesis of the Bintliff/Snodgrass Boeotia survey.[25]

At Tanagra, this interpretation seems to be confirmed by the presence of small but distinctive concentrations of better-preserved material, which must have a different origin. Most of these are obviously related to funerary sites, but some are likely to represent farmsteads or sheds. The difference is not just a matter of concentration and preservation of the material. The likely funerary sites have a much wider date range than either the pre-Roman city or the "background noise" of that period: leaving aside some finds dating to the Late Bronze Age, they start in the Archaic period and continue into Hellenistic. Moreover, they contain relatively high numbers of decorated pottery which is only rarely found elsewhere in the survey area, mostly fragments with black floral patterns, but occasionally also various figured imports, including a few Corinthian quatrefoil aryballoi and Attic black and red figure. In other words, little funerary material seems to have ended up

25. J. L. BINTLIFF, A. M. SNODGRASS, "Off-site Pottery Distributions: A Regional and Interregional Perspective," *Current Archaeology* 29 (1988), p. 506-513; S. E. ALCOCK, J. F. CHERRY and J. L. DAVIS, "Intensive Survey, Agricultural Practice and the Classical Landscape of Greece," in I. MORRIS (ed.), *Classical Greece. Ancient Histories and Modern Archaeologies* (1994), p. 137-170; A. SNODGRASS, "Response: the Archaeological Aspect," *ibid.*, p. 197-200.

spread out over the countryside. The probable farmsteads, on the other hand, do have a similar date range as the city and the disputed manure, but stand out because of the density of easily recognisable finds, including large chunks of well-preserved tiles and (sometimes impressively large) fragments of heavy-walled storage vessels, while fine wares are relatively rare, comparable to the "noise." Although it is possible that a number of farm sites have been destroyed and dispersed over their surroundings through the centuries, the striking contrast in state of preservation, with hardly any finds of an intermediate character, and the different proportions of some kinds of finds make it very unlikely (at least around Tanagra) that "background noise" consists of "ground" farm sites as has been suggested recently.[26] The presence of the very conspicuous and compact site TS1 in an otherwise rather empty area even suggests that in some parts of the extra-urban transects few farming sites may have disappeared. The "background noise" must have a different origin.

TS1

To arrive at a better understanding of a typical farming site, a more detailed study of the finds from extramural site TS1 has been started. TS1 is a very conspicuous site, a dense concentration of sherds, many of which apparently recently broken and ploughed up, and in an area with a relatively low "background noise,"[27] the finds do not contain any "intrusive" items which cannot be explained within the total assemblage. Although relatively clear and pure, TS1 can be seen as a representative example for other small rural sites of the Classical-Hellenistic period found in the Tanagra area, but previously also in other surveys elsewhere in Greece (we here correct our previous suggestion of an Early Roman date for the farm, as a result of a more refined fabric and form analysis carried out together by myself and the Roman ceramic team led by Jeroen Poblome).

Material was collected from a roughly rectangular grid of 17,10 × 10 m, centring on a core of 3 squares with the highest find density and most of the best preserved material. The oblong shape of the site is certainly related to its position at the edge of a stretch of arable land, close to a calcareous, non-cultivated ridge top. Even though the number of potsherds is substantial, by far most of the finds (by weight and numbers) consist of tile fragments of the typical Tanagran Classical-Hellenistic tile fabric briefly described above. Yet, the variation in finish (black, red or brown gloss), colour (from dark brown to orange red), fabric quality and shape and thickness of the fragments is astounding. In fact, amidst the more than 100 "diagnostic" fragments kept, just a few good matches in size and

26. D. K. PETTEGREW, "Chasing the Classical Farmstead," *JMA* 14 (2001), p. 189-209; response by J. L. BINTLIFF *et al.*, "Classical Farms, Hidden Prehistoric Landscapes and Greek Rural Survey," *JMA* 15 (2002), p. 260-266.

27. Cf. BINTLIFF *et al.* 2001, figs. 4-5.

quality can be found. Since the site is quite small and cannot have lasted more than a few centuries—and probably had a much shorter life—the roof(s) covered by these tiles must have been extremely patchy, and are likely to have consisted of second hand material. Perhaps, moreover, repairs were continuously made by simply adding tiles on top of leaking ones, as was the practice more recently.

Besides the tile fragments, which are often quite well preserved, TS1 has yielded a wide range of other ceramics, often in a shattered state. Interestingly, the preservation of larger, thick walled sherds generally seems better than that of finer pottery, which is broken into (also relatively) smaller fragments, showing more wear. Perhaps, the heavy vessels were preserved in situ, whereas finer pottery mostly represents material already discarded before the abandonment of the site. The fact that some groups of pithos and amphora fragments appear to belong together as parts of single vessels may support this hypothesis. Nevertheless, even for these items no complete profiles can be reconstructed, and the numbers of bases, handles and rim fragments do not match at all. One may conclude the obvious, ie that the visible and recovered material represents only a small part of the assemblage originally formed, and that many items have disappeared completely. Therefore, even in this well-preserved site, absence of certain groups of vessels which may be expected at small rural buildings, does not have to be meaningful, and may well be a matter of chance.

Having said that, there do not seem to be many missing categories at TS1. Besides the mentioned tiles, pithoi and amphorai (the latter mainly in the soft buff and orange fabric mentioned above), the ceramic finds include loomweights, cooking vessels, black gloss fine wares, a few bits of lamps and a heavy, apparently imported, recut drain or flat implement. It is notable, however, that the black gloss fragments are not just few, but also do not represent a functional assemblage. Clearly, much is missing. Little of the material is well-dateable, but the amphorai suggest a range of c. 350-250 BC, perhaps a little later, and the rest of the material would fit in with that. Further study will surely refine these dates.

Functionally, the whole would appear to belong to a typical farmstead site, with much storage pottery, but also vessels needed for daily life. If not just a result of a low preservation rate, the small amount of—rather mediocre—black gloss fine wares suggest that this farm life was rather simple, as may also be indicated by the patchy roof. The assemblage does suggest, however, that people lived at the site more or less permanently: loomweights, lamps and cooking pots are not likely to have been regular items at sheds or barns. The roof may be a sign of poverty rather than of an ephemeral building. On the other hand, it cannot be excluded that habitation was seasonal, or limited to people dependent on city dwelling owners. In any case, apart from the perhaps simpler fine wares, the finds do not seem to differ much from the relatively little city material of the period we have. TS1 would do fine as a citizen farm.

THE LATE HELLENISTIC TO LATE ROMAN CERAMIC SPECTRUM OF TANAGRA[28]

Jeroen POBLOME, Ariane CEULEMANS and Karlien DE CRAEN

The challenges

As far as the urban context is concerned, the methodological framework is quite specific, as discussed in both previous preliminary reports.[29] The results of the earlier topographical survey conducted by D. W. Roller in 1985, indicating that the urban framework going back to the 4th century BC was largely consolidated by late Roman times, was confirmed by the recent multi-strategy survey work. This situation raises specific questions concerning the visibility and potential for reconstruction of other than the final phase of occupation. We look forward to evaluating these aspects once the entire *intra muros* assemblage has been processed. The fact that the intensive surveying practices were combined with detailed surface mapping and geophysical prospection campaigns of the archaeologically protected area, should provide alternative approaches to the material.

Our fieldwork was intended to build on the previous—preliminary—analysis of the material, which suggested to the surveyors a later Hellenistic and early Roman contraction of the settled zone and a major renewal of occupation in late Roman times.[30] On balance, three-quarters of the material consisted of late Roman material, with mainly amphorae (4th to 6th centuries AD), 10% was attributable to the Hellenistic/early Roman

28. The first contact with the late Hellenistic to late Roman material resulting from the fieldwork at and around ancient Tanagra was organized in May 2002, involving J. L. Bintliff, K. Sbonias, E. Farinetti and J. Poblome. The main aim of this short visit was to establish the research potential of the material, introduce J. Poblome to the project background and goals, and establish the practical and methodological organization of the pottery processing.
The first genuine study campaign took place in November 2002, involving A. Ceulemans, K. De Craen and J. Poblome and fruitful discussions and collaboration with J. L. Bintliff, B. Slapšak and V. Stissi. The former selected the late Hellenistic to late Roman pottery assemblage of Tanagra as their graduation project at the Katholieke Universiteit Leuven, under the guidance of J. Poblome. Determination and registration work started on both urban and suburban collection units. A general total of 1786 sherds was registered.
The study of the ceramic assemblage formed part of the IUAP-PIA V/09 network on "Urban and rural transformation in the western and eastern Roman empire. Interdisciplinary archaeology of late antique and early medieval times," coordinated by Marc Waelkens (Katholieke Universiteit Leuven) and funded by the Belgian Federal Office for Scientific, Technical and Cultural Affairs (2002-2006). Within this network the Universiteit Leiden, represented by the "Ancient Cities of Boeotia Project," forms part of the partnership with the "Sagalassos Archaeological Research Project" of the Katholieke Universiteit Leuven. The funding has been applied to exchange expertise and scholars, represented by the Slovenian geophysical research unit and by J. Poblome. All parties involved wish to acknowledge the new structure developed by the Belgian authorities, which proved to be instrumental in developing the collaboration.

29. BINTLIFF *et al.* 2000 et 2001.

30. BINTLIFF *et al.* 2000, p. 103 ; BINTLIFF *et al.* 2001, p. 46.

period (3rd century BC to 1st century AD) and generic imperial material (1st century BC to 3rd century AD) was a rare category of finds.[31] The abundant combed ware amphorae fragments were considered as items largely exported to Constantinople and forming part of an interregional redistribution pattern of agricultural produce.[32] The earlier material, on the other hand, was mainly represented by tablewares, and indicated a concentration of the occupation into a smaller area.[33]

Within the northern area of the town, the traces of artisanal activity needed further characterisation and this aspect was considered a priority during the first stages of our fieldwork.

In these early stages of the work, the urban halo was not yet studied. We instead chose to concentrate on the material from the three Roman farming units identified within respectively the western extramural transect (TS2 at c. 900 m from the town and c. 0.35 ha in size), and the northern extramural transect (TS3 at c. 600 m from the town and 1.6 ha in size / TS4 at c. 700 m, 0.2 ha in size). TS2 and TS4 contained additional indications of status, suggesting social differences between farmers. In this context, we also needed to compare the chronology of the sites to the town, possibly indicating intensified late Roman agricultural production.

In general, our aims are to establish potential variation in the chronological distribution of the urban and suburban material, characterize variation in functional zoning, study sociological and economical patterning in the ceramic material, integrate the local ceramic assemblage in its wider regional and supra-regional contexts, and develop the proper methodological framework to approach these aspects. The following paragraphs represent a first series of thoughts on this work in progress.

Aspects of chronology

Table 1 presents an overview of the chronology of the urban material studied so far. Dates are assigned by combining fabric and typological features. The subtotals represent the early imperial (150 BC-1st century AD), mid imperial (2nd-3rd centuries AD) and late Roman (4th-early 7th AD) material. The reduced total is intended to enhance the reading of the material, by eliminating the largest undiagnostic category of LH-LR pottery (302 sherds) from the LR subtotal.

31. V. STISSI, in BINTLIFF *et al.* 2001, p. 57-58.
32. *Ibid.*, p. 58
33. *Ibid.*, p. 59.

Table 1. Chronological overview of the urban grids studied in 2002

Period	Count	% of total (902)	% of reduced total (600)
Subtotal ER	63+1?	6.9	10.5
Subtotal MR	171+1?	18.9	28.5
Subtotal LR	668+8?	74	61
Total	902+10?		

Clearly the final occupation phase of Tanagra shows most strongly in the collected material, representing the better half of the assemblage. The remainder of the material attests to a more varied chronological picture, however, indicating a fairly strong Flavian to Severan urban occupation, which was somewhat underestimated in earlier work at the site. The main remaining problem can be defined as the late Hellenistic period. Although this situation finds many parallels throughout Greece, the fact that it is also a typical transition area between two ceramic specialisms should warn us against making too much of the results at this stage. Taking the over-representation of the later Roman material into account, and the general undiagnostic features of contemporary cooking pots and transport wares, could give Strabo's[34] consideration of Tanagra as a relatively well-to-do community somewhat more credibility. This can be confirmed by the fact that all studied grids contained a similar proportion of other than late Roman material. At this stage, however, not enough material has been studied to firmly conclude against a contracted settlement in late Hellenistic/early Roman times. For the same reasons, no chronological distribution maps have been included in this report.

Comparable results were obtained in the countryside at sites TS2, TS3 and TS4. The main occupation period of TS2 and TS4 was late Roman, but both farming settlements could possibly go back to earlier Roman times. TS3, on the other hand was basically late Roman in date, with only a token presence of earlier material (**Table 2**). The enhanced totals were calculated by eliminating the undiagnostic category of LH-LR pottery (63 sherds at TS2, 419 sherds at TS3 and 125 sherds at TS4). These first results imply a correlation with the urban spectrum and indicate the intensified use of the agricultural hinterland in late Roman times. These results need further confirmation from the study of the suburban halo. The fact that so far only transects were studied in the suburban zone calls for some degree of caution in extrapolating these data.

34. Strabo, IX 2, 5.

Table 2. Chronological overview of the rural site grids studied in 2002. The reduced total eliminates the LH-LR category.

TS2

Period	Count	% of total (106)	% of reduced total (43)
Subtotal ER-MR	12.2	30.2	
Subtotal LR	93+1?	87.7	69.7
Total	106+1?		

TS3

Period	Count	% of total (559)	% of reduced total (140)
Subtotal ER-MR	14	2.5	10
Subtotal LR	545+2?	97.4	90
Total	559+2?		

TS4

Period	Count	% of total (184)	% of reduced total (59)
Subtotal ER-MR	19	10.3	32.2
Subtotal LR	165+6?	89.6	67.7
Total	184+6?		

Approaching functionality

A second aspect of research was to test whether the material preserved at the surface would sustain the reconstruction of functional patterning within the urban area, and also at the suburban sites (Table 3). The studied material was classified in six different functional categories: 1. agricultural production, containing the local and regional line of amphora production and local products such as beehives, 2.-3. beverage and food consumption represented by respectively drinking cups, and bowls and dishes forming part of a tableware assemblage, 4. food processing containing all types of cooking ware, 5. storage, with mainly jugs, jars and containers and 6. transport, represented by the types of amphorae imported into Tanagra.

From the topographical and the geophysical survey, Grid 10, located in the eastern part of the town, was considered to form part of domestic units. Considering the variety of functions of the registered pottery and the balanced proportions between the functions, with a slightly higher percentage of cooking wares, the ceramic assemblage provides further confirmation of this identification. Grid 10 stands in clear contrast to Grid 1 in the southeastern part of town, at the bottom of a local depression in the area of the Asopos town gate, with a very high representation of transport amphorae, a generally unbalanced proportion of functional categories and a notable lack of cooking wares. At the moment,

Table 3. Functional patterning at Tanagra and its agricultural hinterland

	Grid 1	Grid 10	Tanagra Total	LH-R Tanagra	LR Tanagra	TS2	TS3	TS4
Agr. Prod.	8.5%	4.3%	5.7%	3.3%	2.2%	25.8%	9.5%	9.8%
Bev. Cons.		2.6%	1.6%	6.6%			0.2%	
Food cons.	19.1%	21%	19%	38.6%	17%	6.7%	7.5%	9.8%
Food proc.	4.2%	31.5%	26.5%	13.2%	1.3%	21.3%	28.9%	41.3%
Storage	12.7%	12.2%	12.9%	7%	10.1%	28%	35.2%	24%
Transport	51%	22.8%	34%	31.1%	71.4%	17.9%	18.5%	14.8%
Total count	47	114	847	212	305	89	491	162

the ceramic assemblage in Grid 1 is identified as a dumping area. The adjoining grids presented similar results. Obviously, these patterns of functional differentiation are provisional in nature, and the aim is to study the urban grids in their entirety in order to arrive at a more balanced interpretation, in conjunction with the other methodological approaches developed at Tanagra. An important element of the argumentation will be the functional diversity established at the general level of the town and how individual grids compare to these totals. In this stage, Grid 10 conforms fairly well to the general urban proportions. Another element of importance in this context, is whether functional categories can be identified for other than the final period of occupation, and if so, whether shifts in the organization of the urban space will be traceable. For now, an over-representation of the diagnostic wares is noticeable, of tablewares in imperial times and transport amphorae in later Roman times. This may be partly due to the higher visibility and degree of recognition of these wares, but partly to the problematic association of cooking wares to specific periods as well. Compared to the general urban totals, a specific problem with storage vessels needs to be signalled during imperial times and a similar absence of drinking cups in later Roman times. The latter phenomenon may find part of its explanation in the fact that this conforms to a more general trend in favour of contemporary glass drinking vessels. Clearly, more material is needed to support more detailed patterns of functional interpretation, such as from areas with public monuments, but we remain positive that the potential of the material is sufficient. Aspects of social differentiation also require a larger database of studied material, and should find further confirmation in the comparison of the surveyed ceramic assemblage with published contemporary domestic assemblages from other sites and regions within ancient Greece.

From our preliminary analysis, the urban and rural ceramic assemblages are apparently of a different nature. In general, vessels related to agricultural production are better represented on the farming estates, especially at TS2, as well as storage vessels, mainly at TS3. Tablewares and transport amphorae, on the other hand, are better represented in the urban assemblage. The high percentage of cooking wares at TS4, and the slightly elevated proportion of tablewares at the same site are noteworthy. As such, the attested assemblages are considered typical for their rural context, along with the fact that the local or regional fabrics dominate the collection of material.

The ceramic spectrum

From our preliminary observations the following main ceramic categories were recognized in the surface material (**Table 4**).

A series of products was considered local or regional in origin. This identification was not yet based on interdisciplinary research, although there is a lot of scope for an integrated research initiative to map the mineralogical resources on a regional scale and initiate an analytical programme of clays and ceramic samples. As yet, our proposal is based on archaeological grounds, considering the time span of the production, the presence of misfired fragments, the specific nature of some of the products, such as beehives, and the general abundance of the ware, especially on the rural sites.

The fact that Tanagra was a ceramic production centre in antiquity should come as no surprise.[35] The variety of the products, including a range of—occasionally slipped—table and plain wares, oil lamps, beehives and amphorae, along with the longevity of the production throughout our period of study, into late Roman and possibly earliest Byzantine times is remarkable, however. The fabric is very dense, fine in granulation, mostly lacking in inclusions apart from some exceptional mica and buff in colour. A tentative link with lake deposits is suggested.

With the concept of local production in mind, the material collected in grids 71, 72 and 78 was quantified and grids 79 and 80 inspected. These grids were located in the northeastern part of Tanagra where a conspicuous concentration of misfired or slag-like fragments had been noted during the fieldwork.[36] The collected surface ceramics attested to a normal pattern of domestic occupation throughout our period of interest, including the late Roman and possibly earliest Byzantine period. No specific link to any artisanal production could be established. Taking into account that potters' quarters in antiquity are mostly associated with cemeteries, and that both rather appear *extra muros*, and especially not mixed with the attested domestic assemblage, the available evidence did not allow for the reconstruction of any type of ancient artisanal production in the area. On the other hand, a small but consistent collection of overfired and misfired fragments was collected here, consisting of fragments of medieval or post-medieval tile and contemporary plain wares. These types of products are typically fired in association. Some misfired tiles and plain wares were also discovered at the site of the Ottoman long houses along the ancient acropolis ridge,[37] raising the possibility that the artisanal production may have been organized at the domestic level as one function of the farming site and possibly of other similar sites in the immediate neighbourhood. The area of the local pottery production in antiquity has to be located elsewhere.

35. R. HIGGINS, *Tanagra and the Figurines* (1986).
36. BINTLIFF *et al.* 2001, p. 61ff.
37. *Ibid.*, p. 50.

Table 4. The main ceramic categories identified in 2002

Food consumption		
local production	*regional production*	*import*
Tanagra fabric (lake deposits) table and plain wares, oil lamps	Boeotia fabric(s) (lake deposits) (table and) plain wares	African red slip ware (Tunisia)
	Soft orange fabric (alluvial deposits) mainly tablewares	
Food processing		
local/regional production		*import*
Casseroles, frying pans and jugs (fluvial)		micaceous fabric
Agricultural production		
local production	*regional production*	*import*
Tanagra fabric (lake deposits) beehives, amphorae	Boeotia fabric(s) (lake deposits) beehives, amphorae	Asia Minor fabric
	Orange sandy fabric amphorae	Dressel 2-4
	LR2 (Aegean)	LR3 (Asia Minor)
		LR4 (Gaza)
		LR5/6 (southern Levant)

A similar, yet slightly coarser fabric with a similar range of products and span of production was defined as a Boeotian fabric group. Only archaeometrical analysis can define the exact nature of this fabric group and its compositional similarities and differences with the Tanagra fabric. For now, the group is separated and studied as a separate entity. The so-called soft orange fabric also needs archaeometrical identification, especially its tentative association with the widely available alluvial deposits from the valley south of Tanagra.[38] The fabric was mainly applied for a series of tableware, which has a typically limited yet consistent showing both in urban and rural collection units, throughout our period of study. In the absence of archaeometrical results and a detailed typo-chronological overview of the ware, we, for now, consider this fabric as an imitation ware of more

38. *Ibid.*, p. 73.

widely distributed types of tableware such as sigillatas or later red slipped wares. As far as amphorae are concerned, the orange sandy fabric, which occasionally also occurs with a distinctive grey core, is considered in association with the soft orange tableware fabric and therefore classified as a regional product. Obviously, only chemical and mineralogical fingerprinting can provide a solution. This type of research is even more necessary for the overwhelming amount of LR2 or group of combed amphora fragments recovered from the town and its hinterland. We do not consider these products to be linked to patterns of exported targeted at Constantinople. In a more or less organized way, Constantinople collected and attracted a wide range of goods from throughout the entire eastern Mediterranean for tax purposes, direct sales, or resales to tradesmen from other regions, bringing these products to areas beyond their traditional restricted pattern of distribution. We see no reason to link the very high proportions of LR2 amphorae attested at Tanagra and its hinterland with such mechanisms of distribution, and would rather expect more variegated and mixed proportions of different types of late Roman amphorae if such were to be the case. As a result, we rather consider LR2 amphorae as a regional Boeotian product, with a standard dominance within its region of production. This type of late Roman amphora was mainly popular in the Aegean and Balkans. As with the other types of late Roman amphorae, not that much is known about its regions and mechanisms of production. Ancient Halieis, in the southern Argolis, and its hinterland have been associated with LR2 production[39] but most likely, as was the case with other generic types of ancient amphorae such as Dressel 2-4 or LR1,[40] other regions may have been involved in its production as well. Further analysis will have to provide more substantial proof, but the abundance of LR2 at Tanagra should not be considered coincidental, and may hold important clues for understanding the nature of the late Roman economy, the importance of olive oil production for the region and its contribution to the (military) annona (on the Danubian border.[41]

39. W. W. RUDOLPH, "Excavations at Porto Cheli and Vicinity. Preliminary Report, V. The Early Byzantine Remains," *Hesperia* 48 (1979), p. 294-320.
40. See J.-Y. EMPEREUR, M. PICON, "Les régions de production d'amphores impériales en Méditerranée orientale," in *Amphores romaines et histoire économique: dix ans de recherche, Collection de l'École française de Rome* 114 (1989), p. 223-248.
41. O. KARAGIORGOU, "LR2: a Container for the Military Annona on the Danubian Border," in S. KINGSLEY, *[illegible] in the East Mediterranean during Late Antiquity* (2001), p. 129-166.

The imported categories of tablewares and amphorae at Tanagra indicate that the exchange pattern in which the site was involved was of a fairly restricted nature, possibly focussed and dependent (on Constantinople) and basically Aegean in nature. Regional self-sufficiency dominated, excluding or reducing direct trading or exchange with Tanagra, also in later Roman times. The near absence or very restricted presence of imported wares, especially tablewares, at the rural sites, may have implications for the reconstruction of the social status of the occupants of these sites, although we would like to study more material to place such observations in their proper functional, social and economic context for both the urban and rural assemblages. The material as such holds great potential!

Addendum

In January 2007, the processing of the late Hellenistic to late Roman ceramic material collected on the surface of ancient Tanagra and in its wider agricultural environment was completed. Although our knowledge has increased considerably since 2002, the preliminary line of thought sketched in this paper is still valid and can serve to document the intellectual progress of this part of the project.

THE MEDIEVAL AND POST-MEDIEVAL POTTERY AND TANAGRA VILLAGE-HISTORY**

Athanasios K. VIONIS

The detailed study and processing of the Medieval and Post-Medieval surface ceramics of the Leiden Tanagra Project was begun during the 2002 field season by A. Vionis after the Project director's invitation (Prof. John L. Bintliff). A preliminary dating of the Post-Roman material had been made by Joanita Vroom, during the 2000 and 2001 field seasons. Our study of the material in 2002 yielded further information on the surface pottery collected during the 2000 and 2001 seasons, while each Post-Roman potsherd was studied and directly entered into the Project's Main Pottery-Database by the present author. This report derives from the study carried out in 2002 on the Post-Roman pottery collected from within the Tanagra city-walls and on the extramural Byzantine village-site of Ayios Thomas (site-code TS5), 1 km east of the city (at the end of the easterly transect). Moreover, it discusses aspects concerning the history of the Medieval and Post-Medieval villages in the area of Tanagra and how—on the basis of ceramic data, historical sources and local memory—these villages moved about from the Middle Byzantine to the Early Modern Era.

As has already been noted by Bintliff and Sbonias[42], ceramic evidence since the first year of our expedition has shown that Medieval finds were very low within the city walls but increased in the extramural zone towards the east, where the Middle Byzantine church of Ayios Thomas stands today. Post-Medieval occupation within ancient Tanagra was traced during the second field season, when a group of four linked longhouses of the Middle Ottoman period were identified on the acropolis hill (the structures were planned by Eleftherios Sigalos and Emeri Farinetti carrying out the total station topographic survey, while a preliminary pottery dating was provided by Joanita Vroom).[43]

- The Post-Roman material studied during the 2002 field season from within the Tanagra walls is from Units 001-050 (**fig. 31**), on the SE sector of the City (covering almost 1/3 of the urban surface), as well as from Unit 089, where Post-Medieval finds associated with the Ottoman longhouses are mostly concentrated (**figs. 32-33**). It is evident that the density of Medieval and Post-Medieval pottery is indeed very low (especially when compared to "Late Roman" finds from within the urban area), but limited activity in Post-Roman times seems spread all over the SE city-sector. Approximately 34.6% of the Post-Roman material from Units 001-050 has been attributed a definite date (ie 10th-12th, 12th-14th, 14th-16th, 16th-18th c.), while the remaining 65.4% cannot be dated accurately and more general terms have been used (ie "Medieval", "Medieval – Post-Medieval," "Post-Medieval").

** In this chapter, the dates are AD.

42. BINTLIFF *et al.* 2000 et 2001.

43. BINTLIFF *et al.* 2001, fig. 14.

- The Medieval Pottery Density map (**fig. 32**) shows some concentrations in Units 23 & 44 and 16, 17 & 47. The term "Medieval" here refers to the period between the 10th and 14th centuries (due to absence of diagnostic Early Byzantine wares), that is, the Middle Byzantine and Frankish eras. The absence of any clearly diagnostic Early Byzantine (mid 7th-9th c.) potsherds is quite remarkable but probably expected, while we believe that study of the remaining material and the expertise of the Project Roman/Late-Roman pottery specialist, Dr. Jeroen Poblome, will help us identify any Dark Age material within our collection. Good quality and better preserved diagnostic "Medieval" material from Units 001-050 constitutes 28.7% of the Post-Roman pottery, some of it comprising 11th-12th and 12th-14th c. plain glazed potsherds of open/tableware shapes (ie mainly dishes and bowls with a low ring-foot base). The vast majority of "Medieval" surface pottery from this sector of the city is however from unglazed/coarse ware, mainly what could be termed as "kitchen wares" for cooking and food-preparation. Only very few tile and amphora fragments of this date could be identified.
- "Medieval – Post-Medieval" pottery (14th-16th c.) is more spread out across Units 001-050 (**fig. 33**) with no real concentrations (most of it is to be found in Units 1, 21, 50, 26 & 29, that is N and S of the acropolis hill). Only 5.8% of the Post-Roman material comprises better preserved finds which can be clearly dated between the 14th and 16th centuries. The majority of these dated potsherds consists of domestic pottery used for storage (storage jars/pithoi), food processing (various coarse/unglazed bowls and cooking wares), few amphora fragments and some tile.
- "Post-Medieval" pottery is equally poorly represented in Units 001-050 (**fig. 34**) with no clear concentrations. Similarly, activity seems to be confined N and S of the acropolis hill, in areas closer to Unit 089 (Unit 089 predominantly contains Post-Medieval pottery of the Middle Ottoman period, as well as the largest part of the longhouses mentioned above). Just 0.1% of the Post-Roman pottery is sufficiently diagnostic to be given a date between the 16th and 18th centuries. Tile and food-processing pottery (all cooking-pot types) constitute the majority in the collection of Post-Medieval finds.

Surface pottery from Unit 089 was studied during the 2002 season in order to get a better idea on the chronology of the four longhouses and their associated finds. Nearly 92% of the diagnostic pottery from this Unit, which has been studied so far, dates between the 17th and (possibly) early-middle 18th c., while only the remaining 8% is dated to the 16th c. The material consists of a large number of glazed bowls, plates and dishes with painted decoration; some closed shapes such as jugs and storage jars are also present in the collection. The presence of a limited number of tile fragments is noteworthy; we would have expected a larger number of those since this is the area where the remains of the "traditional" four longhouses are to be located. Although not all the material from 089 and its neighbouring Units has been studied yet, the presence of some misfired tiles and plain wares noted at the site of the Ottoman longhouses probably indicates that the "post-medieval household" was the basic pottery production-unit. Indeed, there are traces of a post-medieval pottery-production site on the north-eastern edge of the city (Units 71, 72, 78; see J. Poblome's report above), where an assemblage of misfired and over-fired tile fragments was sampled. The limited presence of tile-fragments on 089 is probably explained by the relatively common practice of village inhabitants removing building material (such as stone and roof tile) from their abandoned houses to their newly founded set-

tlement location. Such an example we have also noted in northern Boeotia, where older inhabitants of the village of Pavlo still remember their ancestors reporting that they removed stones and roof tiles from the houses of the abandoned village of Rado Golemi in order to build new ones at Pavlo itself.

It is important to note that overall the majority of Post-Roman pottery within the urban area in Units 001-050 on the SE sector of the city is predominantly Medieval in character (**figs. 31, 35**), with only a small sample of Post-Medieval finds (excluding Unit 089 which consists almost entirely of Middle Ottoman ceramics). The higher proportion of unglazed/coarse wares over the poorly represented glazed/fine wares of the Middle Byzantine and Frankish periods is also noteworthy. This pattern seems to confirm the initial hypothesis that this small component of (10th-) 11th-14th c. potsherds within the urban area might suggest that the city had already been abandoned by the Middle Byzantine period in favour of another location[44] (Ayios Thomas in this case, as discussed below). A tiny rural site or farm existed on the ancient acropolis dependent on and under the shadow of a larger village community not far away from it (Ayios Thomas or site TS5 is located 1 km east of the city).

Study of the surface ceramic finds from the village-site of Ayios Thomas (around the Middle Byzantine church of St Thomas) has revealed that a substantial community was occupying the site during the Middle Byzantine and Frankish periods (**fig. 40**). The site (approximately 1.5 hectares in size) was discovered during the first fieldwork season in 2000, 1 km from the city-wall, at the end of the easterly transect. It was attributed the co-dename TS5 and was gridded during the second field campaign in 2001. Detailed study of the ceramics from this site started during the third field season in 2002. The site has so far revealed a large assemblage of Byzantine- and Frankish-period pottery, both glazed and unglazed and of almost all shapes and forms. However, time only allowed the complete study of the first ten grids (grids A, AA, AB, AC, AD, AE, AF, B, C and D), to the N and SE of the Ayios Thomas churchyard (**fig. 36**). The pot-types we identified by this stage from TS5 range chronologically between the (10th?-) 11th-14th centuries. It seems that a small village community was established there by Middle Byzantine times, at the end of the 10th or the beginning of the 11th c., growing steadily throughout the 11th and first half of the 12th centuries. Growth continued and occupation reached its peak during the second half of the 12th and well into the 13th c., during the early Frankish period (**fig. 37**). There is a decline in the number of potsherds dated in the early-mid 14th century, suggesting that population numbers dropped significantly by that time, as has been the case with other Boeotian villages of the period, which were abandoned and eventually re-colonised by incoming Albanian clans a little later. We should also note that ceramic evidence is to a great extent contemporary with the church of St Thomas at the site. The

44. *Ibid.*, p. 48.

Ephor of Byzantine and Post-Byzantine Antiquities Mrs. Koilakou informed us in 2001 that the church was constructed in the mid-12th c. and converted into a Frankish feudal tower with chapel in the 14th c.[45]

Although surface pottery so far studied from grids A to D constitutes 30% (by sherd-count) of the total assemblage from TS5, it is a quite representative sample upon which we can draw some first conclusions on the site's date and character. A provisional functional analysis of this 30% of the assemblage (**fig. 38**) clearly shows that TS5 was a typical Boeotian settlement-site/village of the Middle Byzantine and Frankish periods (in comparison to glazed pottery-types and dated material found in other Boeotian villages of the period). Most of the pottery used is indicative of food consumption and includes various types of tableware, such as dishes and plates with low ring-foot bases, shallow and deep bowls and jugs. Decorated/glazed pottery includes brown-and-green-painted, slip-painted, incised sgraffito, monochrome sgraffito and monochrome-glazed wares. There is a considerable amount of pottery fragments from transport and storage vessels, such as unglazed amphorae of coarse fabric with wet clay finish (there is a difference in colour between the wet finish and the sherd's fabric) and vegetable pores, very typical in Boeotian Middle Byzantine and Frankish assemblages. Candlestick fragments are also present in the assemblage together with some tile of the same period, while a few medieval beehive fragments suggest that the community was to some extent engaged in honey-production, most probably for local consumption.

The higher presence of glazed/tableware over the unglazed/coarse wares (including transport amphorae, beehives, storage jars, pithoi, and cooking pots) on TS5 is however noteworthy.[46] One would have expected an assemblage typical of a rural community living entirely off the land, with a greater emphasis on vessels used for storage and food preparation rather than for meal times. Excavations at urban sites, such as Corinth and Istanbul,[47] have proved that from the late 11th c. the percentage of glazed pottery increases noticeably throughout the following period. TS5 is a rural site and although its ceramic assemblage

45. *Ibid.*, p. 47; A. M. SIMATOU, R. CHRISTODOULOPOULOU, "Ayios Thomas Tanagras," in *13th Symposium of Byzantine and Post-Byzantine Archaeology and Art. Symposium Program and Abstracts* (1993), p. 54-55; the relevant reference was kindly provided for me by Dr. K. Sbonias.

46. J. L. BINTLIFF, *pers. comm.*; the collection team was always advised not to get carried away and pick-up simply decorated pieces but all kinds of feature-sherds.

47. Sanders has shown that glazed pottery in the Corinth assemblages (by weight) accounts for 0.7% in the 10th and 11th c., 2% in the early 12th c., 6% in mid-12th and 20% in mid-13th c., cf. G. D. R. SANDERS, "New Relative and Absolute Chronologies for 9th to 13th Century Glazed Wares at Corinth: Methodology and Social Conclusions," in K. BELKE, F. HILD, J. KODER and P. SOUSTAL (eds.), *Byzanz als Raum. Zu Methoden und Inhalten der historischen Geographie des Östlischen Mittelmeerraumes* (2000), p. 153-173; Hayes has similarly noted that the proportion (by sherd count) of transport amphorae (which accounted for some 85% until at least the 8th c.) in Saraçhane at Istanbul dropped to some 50% of total finds in the latest deposits of the Middle Byzantine period, cf. J. W. HAYES, *Excavations at Saraçhane in Istanbul: The Pottery* II (1992).

indicates a rather "urban" character, the glazed tableware material itself is most likely locally produced and distinctly local or "provincial" in appearance.[48] No imported wares have yet been identified in any of the grids studied. This distinct feature of our assemblage on TS5 would rate glazed tableware as objects of daily use rather than objects reserved only for special occasions, suggesting that peasants in the (later) Middle Byzantine and early Frankish countryside were possibly better-off. On the other hand, as Sanders[49] has pointed out in regard to ceramics found at Corinth, large pithoi and storage jars were probably expensive to acquire and most people were expected to buy no more than two or three in a lifetime. Moreover, one has to consider aspects regarding domestic architecture and the use of domestic space. It is possible that late medieval rural housing was equipped with built structures serving storage requirements (setting contemporary housing in the Aegean littoral as a parallel)[50] and resulting in a limited need for ceramic storage-containers. Cooking and dietary traditions is another factor to be considered. Roasting and grilling was specially preferred in Byzantine cuisine, in contrast to Western boiling and oily dishes. Thus, large numbers of cook-pots in the "Ayios Thomas" households would not have been necessary. Similarly, a preference for vegetables and other foodstuffs available seasonally in rural areas, such as TS5 in later Middle Byzantine and early Frankish times, made consumption more direct, limiting the numbers of cooking pots and storage vessels. Vessels made of wood, leather or basketry for transportation and export of local foodstuffs could also have been used.

Surface ceramics from within the walls of Tanagra suggest that the city witnessed vigorous activity during the Late Roman period (4th-6th c.) in contrast to the succeeding Early Byzantine times. Further work and study of the remaining material from the urban area will provide us with a clearer picture of the development during the so-called Dark Ages and possibly bridge the gap between the 6th/7th-century-activity within the walls and the 10th-century-occupation of Ayios Thomas/TS5. A preliminary report on the survey-work carried out by Roller in 1985 has pointed to the existence of an unusual number of Christian-period architectural fragments in the church of St Thomas itself.[51] Roller has suggested that this may indicate an attempt to bring all church marbles to St Thomas, probably at the time of the abandonment of Tanagra. Excavations carried out in 1890 by Konstas[52] and the Greek Archaeological Service revealed the remains of a

48. Cf. J. VROOM, "Medieval and Post-Medieval Pottery from a Site in Boeotia: a Case-Study Example of Post-Classical Archaeology in Greece," *ABSA* 93 (1998), p. 513-546; archaeological evidence on another published village-site in Boeotia, site VM4 or "Panaya", indicates the existence of local production of ceramics.
49. G. D. R. SANDERS, *loc. cit.* (*supra*, n. 47), p. 170.
50. A. K. VIONIS, "The Meaning of Domestic Cubic Forms: Interpreting Cycladic Housing and Settlements of the Period of Foreign Domination (c.1207-1821 AD)," *Pharos* 9 (2001), p. 126.
51. D. ROLLER, *loc. cit.* (*supra*, n. 4), p. 213-232.
52. D. D. KONSTAS, "Ἀνασκαφαὶ Τανάγρας," *Prakt* 1890, p. 33-35.

Christian basilica of the 5th c. (40 × 20 m in dimensions), on the highest point of the city, just inside the SW corner, presumably on the site of an ancient temple.[53] It has also been suggested[54] that the Middle Byzantine church of St Thomas was built on the site of an Early Christian basilica. It has to be noted that it is difficult to draw definite conclusions on the fate of the city and its population after the end of the Late Roman era on the basis of the available surface ecclesiastical remains. We could argue, however, that on the basis of earlier survey work carried out by the Durham-Cambridge Boeotia Survey Project, for other cities in Boeotia after Late Antiquity, "the successor settlement of the Byzantine period may lie on or very close to an ancient town, occupying a small part of it or even lie outside in its vicinity."[55] The discovery of TS5 1 km east of the Tanagra walls with ceramic evidence of the (10th-) 11th-14th centuries further testifies to the above argument.

TS5 seems to have been established by a small farming community at the end of the 10th or beginning of the 11th century, growing further during later Middle Byzantine and Frankish times, and providing another example of nucleated Medieval settlements of a hamlet-village nature.[56] The 11th-12th centuries have seen the recovery and growth of the Byzantine provinces as a number of surface surveys in Greece have shown. Similarly, the establishment of several rural sites of this period in Boeotia studied by Bintliff[57] (such as PP16 between Thespiae and Neochori) and the building of the church of St Thomas on TS5 in mid-12th century indicate population growth and the recovery of imperial control over the Central Greek countryside. The continuous growth of TS5 during the 13th (-14th) century was possibly the result of the village having been taken over by incoming Frankish minor lords,[58] whose fiefs were dominated by a well-defended tower.[59] The church of St Thomas was converted to a feudal tower with chapel in the 14th century, and probably used as a residence by the local Frankish knight overlooking his territory and subject population. It seems, however, that population on the site declined later in the same century, possibly as a result of the Black Death devastating Greece and parts of Europe, and the continuous warfare between Byzantines, Ottoman Turks and Latins that ravaged most of Eastern Boeotia and its Aegean coasts. Meanwhile, the limited evidence for human activity/occupation in the urban area of Tanagra during the 11th-14th centuries

53. J. FOSSEY, *op. cit.* (*supra*, n. 14), p. 46.
54. A. M. SIMATOU, R. CHRISTODOULOPOULOU, *loc. cit.* (*supra*, n. 45), p. 54.
55. J. L. BINTLIFF, A. SNODGRASS 1988, *loc. cit.* (*supra*, n. 1), p. 57-71; BINTLIFF *et al.* 2000, p. 94.
56. J. L. BINTLIFF, "The Archaeological Survey of the Valley of the Muses and its Significance for Boeotian History," in A. HURST, A. SCHACHTER (eds.), *La Montagne des Muses* (1996), p. 193-224.
57. *Ibid.*, p. 201.
58. P. LOCK, "The Frankish Period in Boeotia: Problems and Perspectives," in J. L. BINTLIFF (ed.), *Recent Developments in the History and Archaeology of Central Greece* (1997), p. 305-313.
59. J. L. BINTLIFF, "The Two Transitions: Current Research on the Origins of the Traditional Village in Central Greece," in J. L. BINTLIFF, H. HAMEROW (eds.), *Europe between Late Antiquity and the Middle Ages. Recent Archaeological and Historical Research in Western and Southern Europe* (1995), p. 111-130.

might suggest (as already mentioned above) a minor settlement or farm-site dependent on the Middle Byzantine/Frankish village of Ayios Thomas.[60]

By the late 14th century both TS5 and the small rural site within the walls of Tanagra were abandoned. Surface finds from Unit 089 within the urban area have revealed a small hamlet or *çiftlik* of the late 16th-early 18th c. with a group of four linked (end-to-end) longhouses on the acropolis hill. As elsewhere in Boeotia during the late 14th and 15th centuries, abandoned villages of the Frankish period were re-colonised by Albanian clans who were invited to settle a deserted land and replace its declining population.[61] However, there is a gap between the late 14th and late 16th c., that is, after the abandonment of TS5 and the establishment of the *çiftlik* village within the Tanagra city-walls. It has been suggested by Bintliff and Sbonias[62] that in 15th century Ottoman tax records the district of Tanagra appears to have been covered with small Albanian hamlets, while the original name of the modern village of Tanagra was the "Arvanitic" Bratsi (for the location of Bratsi see **fig. 27**). Therefore, one of the two Bratsis appearing in the Ottoman records should refer to modern Tanagra. Thus, after the abandonment of TS5 and the small rural site of the 11th-14th centuries within ancient Tanagra, if there was any surviving Greek population in the district, it might have migrated to Bratsi to join the incoming Albanian migrants, although personal name evidence in the Ottoman tax records suggest a great predominance or even monopoly of Albanians in these communities. The late 16th and 17th centuries saw a political and economic crisis of the Ottoman system, while many villages in the Ottoman countryside broke up into serf *çiftlik* estates. It was around this time when the identified four longhouses were built on the acropolis hill of ancient Tanagra.

Likewise, Ottoman tax registers refer to a village called "Kinos Bala"[63] on the hills, southeast of TS5. Kinos Bala or Guinossi/Guinossati (as shown on the *Carte de la Grèce* of 1852) is recorded to have been a tiny hamlet/*çiftlik* with 10 households in 1466 (**fig. 39**). A first visit to Guinossati during the 2002 field season was a pleasant surprise to us, with ruins of longhouses (at least 7 in number) and abundant surface pottery of the late 16th-18th centuries. Guinossati was abandoned around the late-17th century or a little later, since it was last recorded in 1646 with only 23 households. Its "daughter village" of Kinos Zir (as it appears in the tax registers, recorded from 1521-1570) must have been close to Guinossati but has not been identified yet. It is very possible that Kinos Zir

60. Cf. BINTLIFF *et al.* 2001, p. 47, for similar conclusions.

61. M. KIEL, "The Rise and Decline of Turkish Boeotia, 15th-19th Century," in J. L. BINTLIFF (ed.)., *op. cit.* (*supra*, n. 58), p. 321.

62. BINTLIFF *et al.* 2001, p. 48.

63. J. L. BINTLIFF, *pers. comm.*; *id.*, *loc. cit.* (supra, n. 59) ; this information was drawn from the Ottoman tax registers at Istanbul, Ankara and Sofia by the Project's Ottomanist Prof. M. Kiel.

was located just beyond the main road, approximately 1.5 km to the N of Guinossati, as local people pointed out to us (mentioning another location with house ruins, similar to those at Guinossati). Similarly, the village of Kleidi, situated in the Parnes foothills, almost 5 km south of ancient Tanagra was recorded between 1506 and 1687. Inhabitants and local historians of the modern villages of Ayios Thomas (formerly Liatani) and Kleidi[64] that we interviewed in 2002 informed us that modern Ayios Thomas (south of ancient Tanagra) and Kleidi, villages with Albanian-Arvanitic elements, were established, and their populations reinforced, respectively, by the mid-18th c. with populations migrating from Guinossati, as well as some inhabitants departing from Dervenochoria. These Dervenochoria are special indigenous communities located at strategic points such as mountain passes, and the ones mentioned were fully deserted after the Greek War of Independence of 1821, when some of their inhabitants settled—apart from Liatani/Ayios Thomas—parts of the Peloponnese by the mid-19th c. It would, therefore, not be implausible to argue that the families occupying the Tanagra acropolis hill until the early-mid 18th c. migrated to the larger and newly founded village of Liatani, 3.5 km east/south-east of ancient Tanagra.

Addendum

I add a few comments on some further results for the study of the medieval and post-medieval surface material on three more campaigns in 2003-2005.

Early Byzantine period (Dark Ages): On my discussion (p. 575) about "the successor settlement" of Tanagra in the Early Byzantine period (after Late Antiquity) and our initial ideas about its location (in comparison to the work that has been carried out by the Durham-Cambridge Boeotia Survey Project), I have to add that indeed a strong "candidate-site" seems to lie in the vicinity, just 2 km southwest of the ancient city. The site coded TS18 lies on the southern transect, occupies the hill of Ayios Konstantinos and was surveyed in 2003. The contemporary monastery dedicated to Virgin Mary occupies most of the hill nowadays. Traces of a Late Roman fortification wall were identified around the hill, while the largest part of the surface ceramic material dates to the same period. The identification of a few fragments of hand-made (non-prehistoric) pottery in a coarse fabric has driven my attention to the whole assemblage, as these fragments are probably dated to the period of the Slav invasions of Mainland Greece, some time between the 6th and 8th centuries. Surely a handful of potsherds do not make a site; however, the period in discussion is special and any limited material evidence for human presence in the region should be of particular interest. Definite conclusions will be reached after the study of the whole surface assemblage is completed.

Middle Byzantine period: In the course of the Tanagra Project, apart from the Middle Byzantine-Frankish site of Ayios Thomas (TS5) that has been discussed in my article, another seven sites of the

64. Giannis Anyfandis (Ayios Thomas/Liatani) and Thanasis Kyriakos (Kleidi) are gratefully thanked for their invaluable information.

same period have been discovered in the wider region of ancient Tanagra. Ayia Aikaterini (TS15) located 2 km southwest of ancient Tanagra and Ayios Polykarpos (TS21) 0.6 km northwest; on the uplands zone to the southeast (in the region of modern Ayios Thomas, Kleidi and Ottoman Guinossati), Ayios Dimitrios (TS30) 2 km northwest of Guinossati, Ayios Nikolaos (TS31) 2.2 km north, Ayia Anna (TS32) 1 km northeast, and Kleidi (TS36) 3.8 km northwest, all are hamlet- and village-sites with surface ceramics dated to the (10th?-)11th-14th centuries. As a result, my argument about population growth and recovery by the mid-12th century (p. 575) when referring to Ayios Thomas (TS5) in Tanagra and several other rural sites of this period (discovered by the 'Durham-Cambridge Boeotia Survey Project') is certainly reinforced. It should also be noted that although the 2002 report notes the absence of any imported wares within the TS5 studied grids (A to D), the complete study of its ceramic assemblage has revealed imports from Corinth, Thessaloniki and possibly Lemnos, suggesting contact between rural Boeotia and other parts of southern and northern Aegean.

Ottoman period: The Ottoman serf-estate of Guinossati (TS23) approximately 6.5 km southeast of ancient Tanagra was discovered in 2002 and surveyed in 2003. We identified and recorded the remains/foundations of seven longhouses, while rubble concentrations at various locations throughout the site might suggest a total of about twelve residential structures, probably representing the last phase of occupation at Guinossati. These domestic remains are in line with the direction of the slope and have a northeast to southwest alignment. The average size of the houses is 50 sqm, and they have no internal divisions, apart from house no. 7. Surface ceramics are dated between the (15th-)16th and 18th centuries. Domestic coarse wares account for approximately 70% of the total assemblage (including large storage pithoi, medium-sized transport and storage jars, small serving jugs of the *ibrik* type, cooking pots and much tile), while the remaining 30% includes rather thickly potted glazed wares (large shallow dishes and deep bowls with footring bases and broad everted rims) decorated with careless broad *sgraffito* or painted designs.

For a complete publication of the structures and surface ceramics from Guinossati and the longhouses on the acropolis hill of ancient Tanagra, with a discussion on the economy and society of the period, cf. A. K. VIONIS, "The Archaeology of Ottoman Villages in Central Greece: Ceramics, Housing and Everyday Life in Post-Medieval Boeotia," in A. ERKANAL-OKTU, E. OZGEN, S. GUNEL *et al.* (eds.), *Studies in Honor of Hayat Erkanal: Cultural Reflections* (2006), p. 784-800.

GEOPHYSICAL AND ARCHITECTURAL SURVEY

Branko MUŠIČ, Emeri FARINETTI, Dušan KRAMBERGER and Božidar SLAPŠAK

In October/November 2002, the Ljubljana University team conducted a 4 weeks geophysical prospection to extend the area previously surveyed at the site of Ancient Tanagra.[65]

The excellent and complementary results by magnetometry (measurement of total magnetic field by caesium magnetometer Geometrics G-858) and resistivity (mapping by Geoscan RM15 instrument) obtained in the 2001 field season continued in the area covered in 2002. A total of 14 ha has now been covered by magnetometry, and somewhat less (7 ha) by resistivity (**fig. 41**). Field conditions were favourable for resistivity survey in 2002, the rather wet summer and the resulting subsoil moisture permitted easy reading, though the average contrast in anomalies detected was somewhat less marked than in 2001. Heavy rains in the second week caused some problems, the level of contrast changed drastically as should be expected, but the overall results are more than satisfactory. Magnetic susceptibility being a physical property of materials independent of exogenous agents such as climate, the magnetic method is not affected anyway by the changing quantity of soil moisture, and can be applied in any season.

The techniques applied and the prospection strategies were the same as in 2001, so we need not repeat the description of our procedures here.[66] To avoid missing important details, the area of and adjacent to what Roller expected to be the Agora was surveyed with maximum precision: transects were laid at 0.5 m instead of 1 m. The resulting image, however, gave little additional detail, so we had to conclude that at this stage at least, such intensification of labour input was not justified. This can be explained by the fact that the magnetic contrast between wall structures and the soil is considerable at our site, and besides, the structures surveyed are relatively large. Smaller and more complex targets might still require such thickening of the grid, but such targets will be chosen at a later stage in the project, when the overall picture is at hand. Let us just add that we continued taking samples of magnetic susceptibility values for typical features and situations, so as to enhance our capacity for interpreting the magnetometry mapping images. The figures were used, together with other geophysical prospection results, in our initial attempts at magnetic modelling (see below). Complementarity of the resistivity results continues to prove

65. The fieldwork was coordinated by Prof. B. Slapšak, co-director of the Boeotia Project. The geophysical team was led by Dr. B. Mušič, with Jure Soklič, archaeologist, Igor Medarič, archaeology student, Hrvoje Švarič, geologist (Zagreb), and Simon Premrl, geology student. The research, which is part of the joint Leiden - Ljubljana Boeotia Project, was made possible through the IAP Late Antique Cities and Countryside Programme, funded by the Belgian government and directed by the University of Leuven; it was co-funded by the University of Ljubljana Department of Archaeology. Reports in BINTLIFF *et al.* 2000 et 2001.

66. See BINTLIFF *et al.* 2001, p. 61-72.

most valuable. **Fig. 45** (resistivity) compared to **fig. 42** (magnetometry) shows clearly that, while magnetometry gives excellent contrast on streets, the response of resistivity is weak there, but often gives more detail on walls within blocks. The image of the church in block 2/4 by resistivity is a good illustration (**fig. 46**: note the detail of the apse, hardly visible on magnetometry). One explanation could be that the Twin Probes method can better detect lateral changes in resistivity (walls) than the vertical ones (street). In any case, georadar tests may give the data on the shape, depth and state of preservation of subsurface features necessary to more reliably ascertain that.

In 2002, the procedure was tested for integrated field survey and analysis of geophysics, surface micromorphology, surface architectural remains and surface distribution of archaeological finds. Emeri Farinetti prepared field handouts from the GIS database, and Kostas Sbonias and herself helped in laying out the reference points on the ground, while Dušan Kramberger provided architectural expertise. The goal here is to exploit the limits of identification of architectural units within city blocks, and eventually propose reliable typological affiliations (see below).

Archaeological implications

Geophysical maps of the area surveyed so far are presented on **fig. 42** for magnetometry, and on **fig. 45** for resistivity. **Fig. 43** gives a 3D view of magnetometry (DEM or Digital Elevation Model by Emeri Farinetti), from the North. **Fig. 44** is a comparison of our magnetometry results and the Roller plan. In anticipation of the results of the integrated architectural survey, we will limit our comments to the most obvious observations only. All denominations of urban units, streets, gates and towers are based on Roller and adapted to the plan as emerging from our survey (**fig. 47**).

The 2002 results confirm further the validity of Roller's identification of the basic module of urban design, which is the city block of 150 × 300 feet (roughly 50 × 100 m), with streets between measured separately. All four sides have been detected of blocks 3/3, 4/3, 8/3, 1/4 - 8/4 and 2/4 – 5/4. Wall Street (the existence of which was suggested by Roller, but which is not noted on his map), 1st – 8th Streets, and 2nd - 5th Avenues were identified. As has already been observed in 2000 and 2001, the position of the Streets fits nicely with the Roller plan. On the other hand, the Avenues are not where he would have them. For one thing, the Central Avenue West is definitely not there. More importantly, the Intervallum between the North wall and the 2nd Avenue was narrower than in Roller, and all the rest of the Avenues are positioned accordingly more to the North than on his plan. So just as the Streets are directed towards the towers in the North wall, the Avenues are directed towards those in the East Wall. Consequently, it is not the 4th Avenue which represents the main structural axis in the south-eastern part of the city south of the ridge, but rather the 5th Avenue, which actually links Tower 36 and the Agora, along the bottom

of the small valley descending in a south-eastern direction towards the wall there. Roller's identification of the Asopos Gate between Towers 34 and 35 must be seriously questioned, and the area of Tower 36 must be given full consideration for the possible position of a gate. These observations are further corroborated by the nature of geophysical anomalies in the area which was identified by Roller as the Agora. Block 5/4 is a full regular city block, so it certainly did not make part of the Agora area. Block 6/4 is clearly delimited by the 5th Street on its whole length on the east, and by the 6th Street in its northern part on the west, down to the south corner of the Stoa. The south-western limit of the block is blurred by the construction in Late Antiquity of a church there, but its southern edge is clearly delimited by the continuation of the 5th Avenue. An open area which may well have been the Agora, can be identified only to the west of that, in the area between what Roller interprets as the Theban Gate, and the Stoa on the edge of the ridge. This open area is delimited on the west, just east below the highest point of the ground in these parts (top of the ridge), by a rectangular building of some 22 × 10 m — most certainly public to judge from visible remains of its construction in large rectangular blocks, possibly a temple. The 5th Avenue would therefore link the Agora, located in the vicinity of the West Wall, with a gate in the East wall (to be checked), and would indeed constitute the structuring axis in this part of the city. South of the 5th Avenue, the 2nd – 4th Streets continue in an orderly way, but at least the 3rd and the 4th Street stop short of reaching what would be the southern edge of the regular city blocks. The terrain is rising towards the steep slope of the theatre area, and access is provided by an oblique street, which corresponds to Roller's Central Avenue East, but which may in fact follow at some distance the back of the skene façade and connect the Agora in the location now identified, and the South Wall between Towers 38 and 39, where Roller assumes the existence of a South Gate. It is to be seen whether the 2nd Street connects somehow to that Avenue. The 1st Street, however, seems to stop at the 5th Avenue and does not continue south at all, and the same is true for the 5th Street. Parts of the area south of the 5th Avenue, to the west of the 4th Street, display an irregular pattern, which is difficult to interpret at this point: it could be both the remnants of an early urban organization, or some very late restructuring around the ecclesiastical centre. Also, we should not forget that the surface survey and the surveying for the DEM have identified in this area the existence of a small hamlet dated to the Turkish period (long houses).[67] As regards individual architecture, besides the skene of the theater at the southern edge of the surveyed area, the buildings in the area interpreted as the Agora, and the Early Christian basilica in block 6/4, we have another church building in the block 2/4. Both church buildings defy the orientation of the urban grid for liturgical purposes, but still try to get fitted into the city block system. There are faint features of similar orientation accompanied by Early Christian surface finds in block 2/3, suggesting the existence of a third church there.[68] There may be a bath complex in

67. *Ibid.*, p. 50 and figs. 13-14.
68. BINTLIFF *et al.* 2000, p. 125.

block 3/5, and further public buildings in block 4/3. 4th Avenue gives access to some privileged sectors of private building along the ridge. The industrial objects (kilns) identified by magnetometry in block 8/3[69] were dated, based on surface material analysed by Jeroen Poblome, to the post-medieval period, so the pottery quarters of the Classical and Roman period are to be expected, as should be, outside the walled area of the city.

Methodological experimentation relevant to future research

While mapping by both magnetometry and resistivity continues with the goal, eventually, to cover the totality of the walled city, and possibly samples at least of suburban areas as well, procedures are also being tested which should enable us to enhance our interpretation of the areas deemed, based on the results of such initial mapping, to be of special interest for the project.

1. Magnetic modelling aims at qualitative and quantitative interpretation of magnetic profiles in terms of assumed archaeological features determined by their magnetic susceptibility, geometry and depth below surface. The software package applied is GM-SYS, normally in use in geology only. The premise is that we can calculate the graph of magnetic values on the surface for an assumed sub-surface set of features (hypothetical model). This calculated graph can then be compared to the graph of measured values on the surface, and the parameters of the hypothetical model are adjusted till the two graphs fit. The fit between graphs should reflect the fit between the hypothetical model and the actual features measured, so we can proceed to interpretation of the survey results in terms of the features employed in the model. In our case, the features will mainly include walls, negative features such as robbed walls, channels, ditches and pits, small structures such as kilns, hearths and isolated monuments, paved surfaces, architectural debris, levelling strata and colluvial deposits. To produce reliable hypothetical models and calibrate magnetic models, we can also turn to georadar profiles (**figs 48-49**). An example of our initial testing is given on **fig. 50**. Such modelling should be instrumental in determining the nature of subsurface features identified either as of special interest for the topography of the city, or as typical of a class of archaeological remains and therefore extrapolatable to a number of cases within the city.
2. Integrated architectural survey aims at extracting information on the nature of architectural remains within the city from combined levels of information including surface micromorphology, surface architectural remains, subsurface information by geophysics, and surface distribution of artefacts. Surface morphology is documented by TS (Total Station) surveying at 4 m (Emeri Farinetti) for the totality of the site, and GPS (Global Positioning System) surveying at under 1 m in areas which may yield architectural information from surface micromorphology. Architectural survey includes mapping and graphic documentation of all visible surface architectual features arguably in situ. GIS and CAD software is used for integration and visualisation of data. This survey should push to the limit our capacity of interpreting the features identified in terms of known architectural types and urban units.

69. BINTLIFF *et al.* 2001, p. 64 and figs. 26, 27.

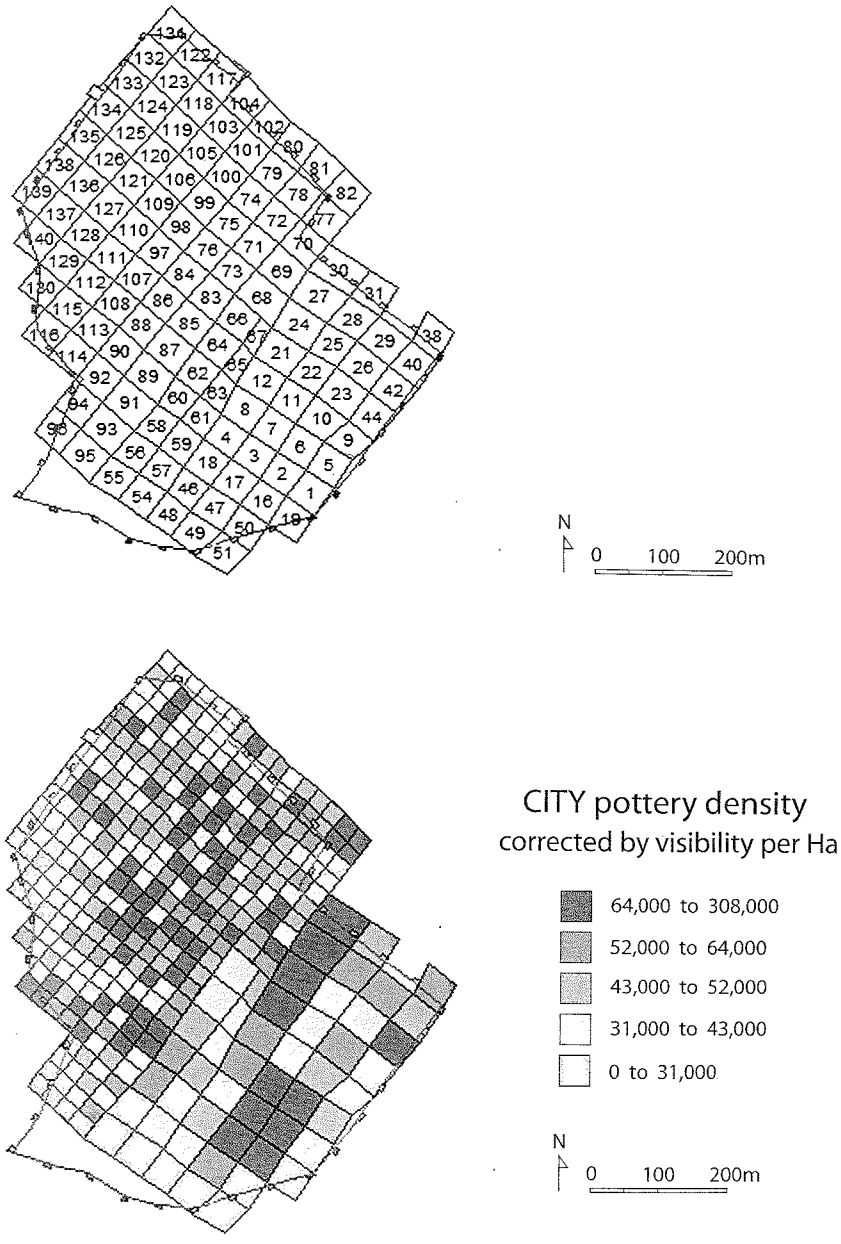
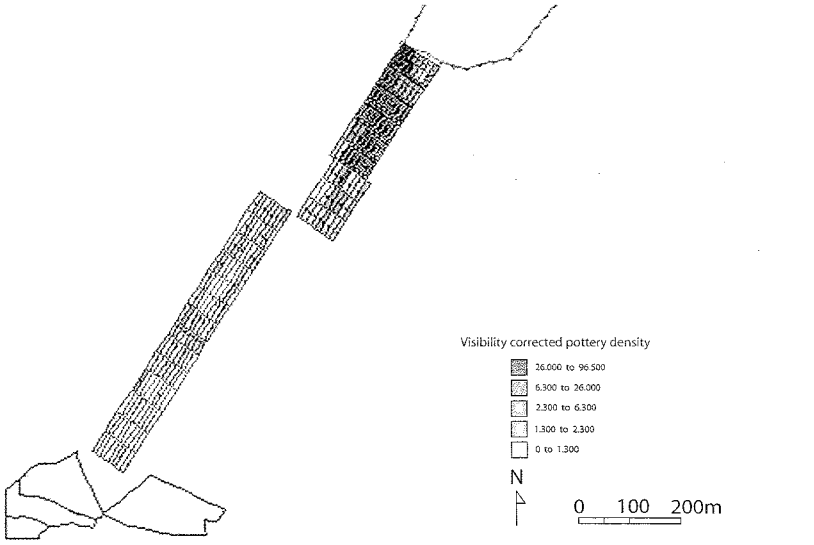


Fig. 1. — Tanagra city survey units.
2. — Surface densities across the city.



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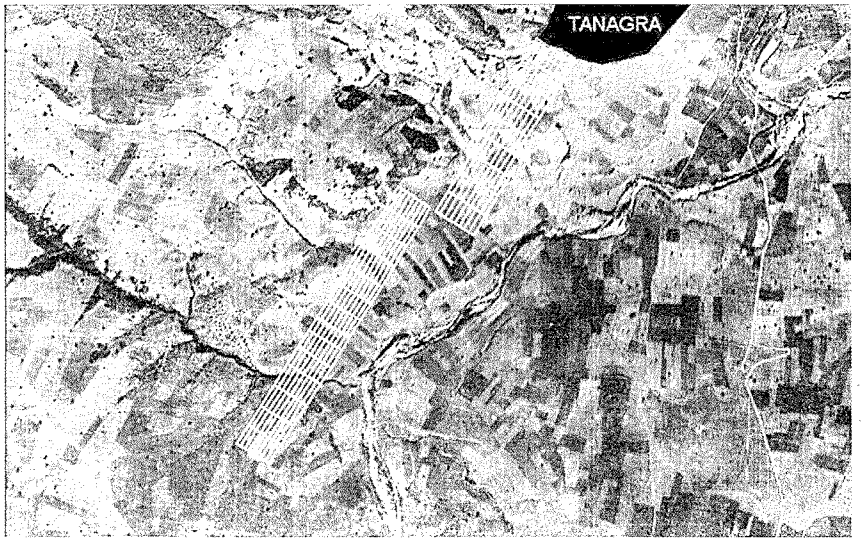
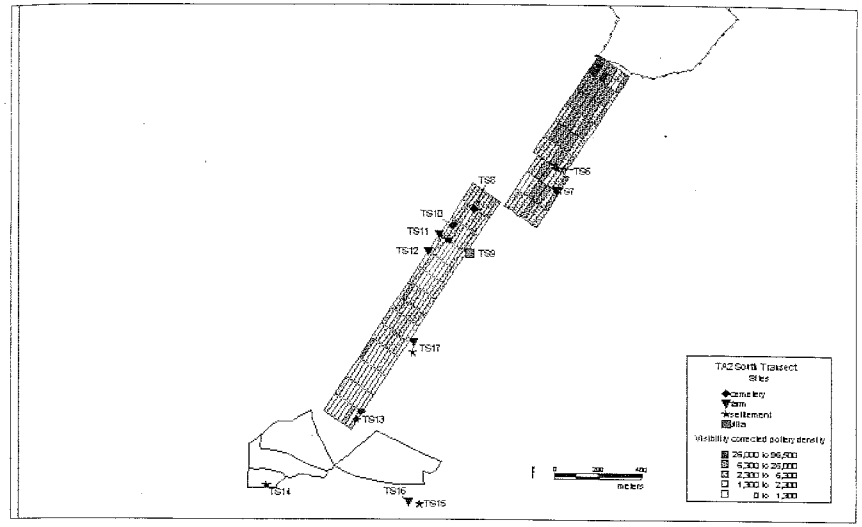


Fig. 3. — South transect visibility corrected density.
4. — Aerophotography of Tanagra region with south transect.



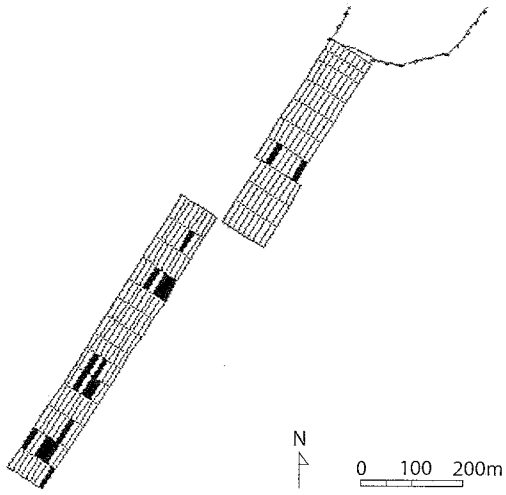
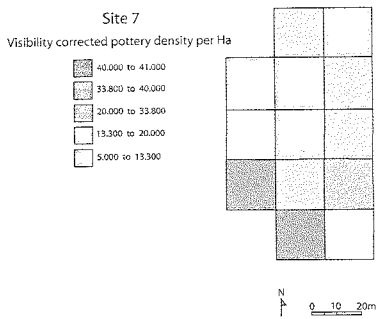
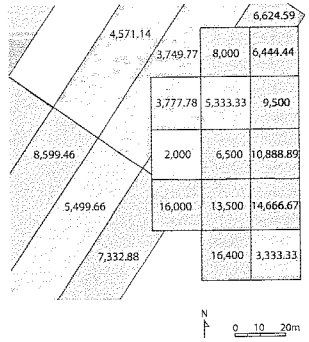
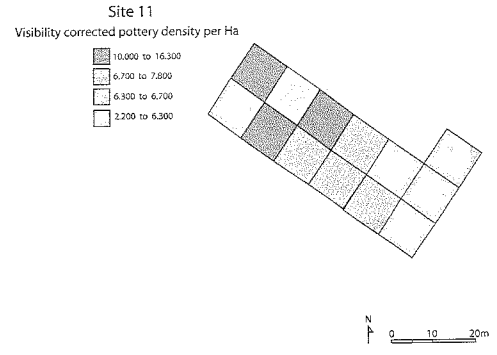
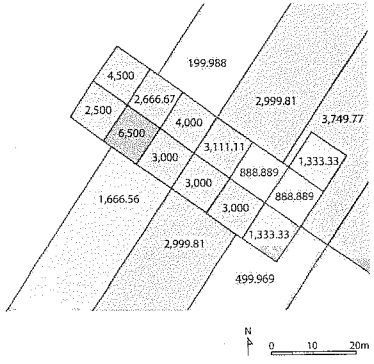


Fig. 5. — South transect and sites with key and site numbers.
6. — Location of prehistoric sherds noted in fieldwalking sample on S transect.









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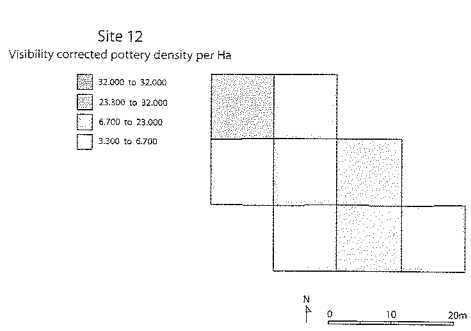
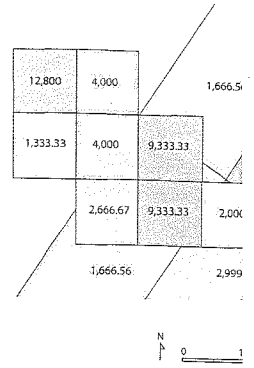
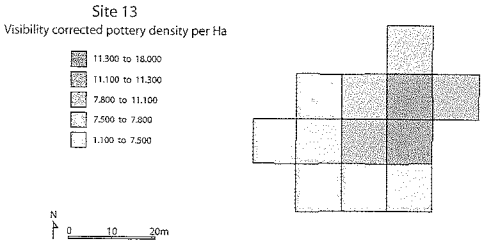
9	10

Fig. 7. — TS7.
8. — TS7 (2.5 factor correction).
9. — TS11.
10. — TS11 (2.5 factor correction).







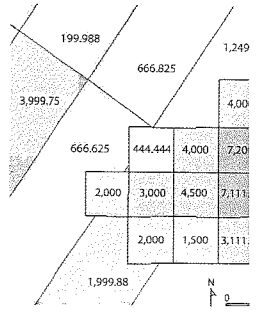


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Fig. 11. — TS12.
12. — TS12 (2.5 factor correction).
13. — TS13.
14. — TS13 (2.5 factor correction).

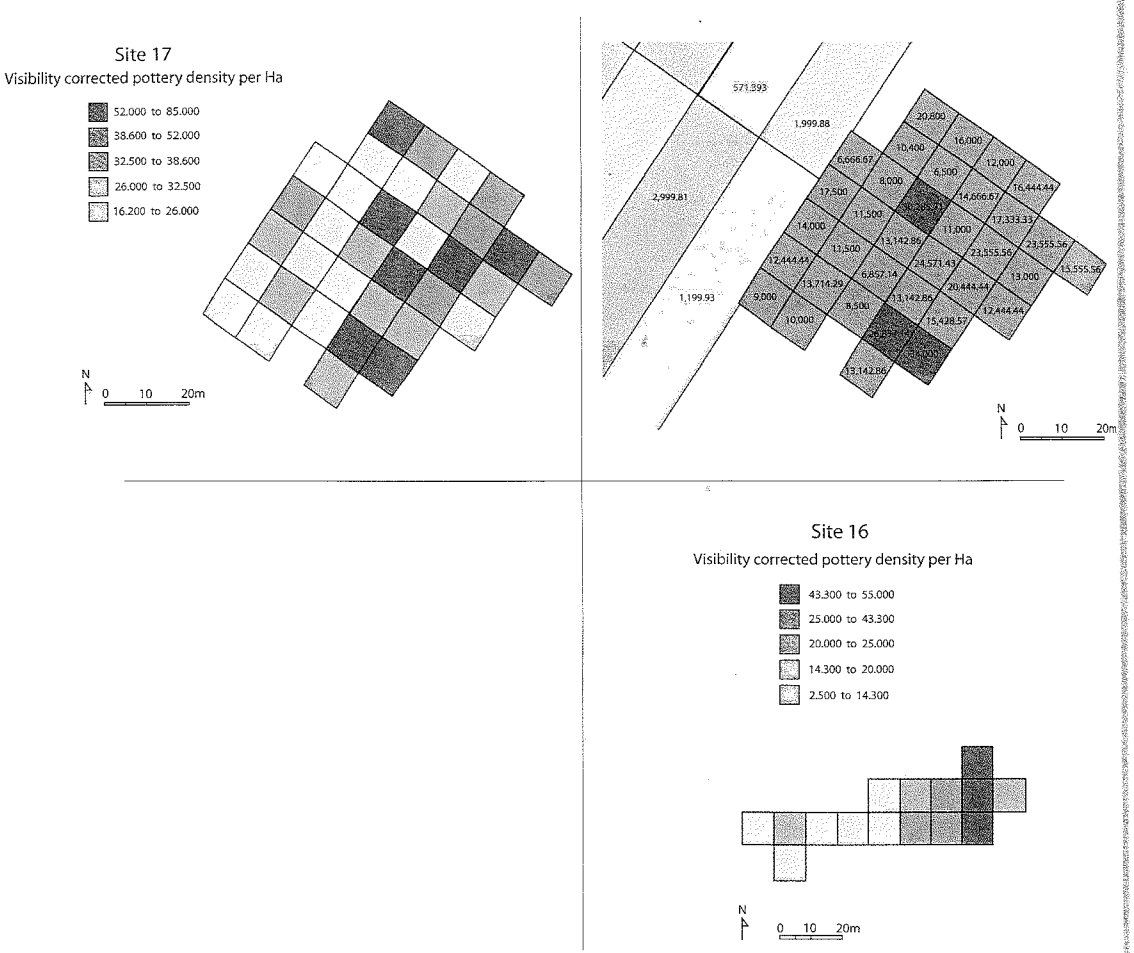

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Fig. 15. — TS17.
16. — TS17 (2.5 factor correction).
17. — TS16.

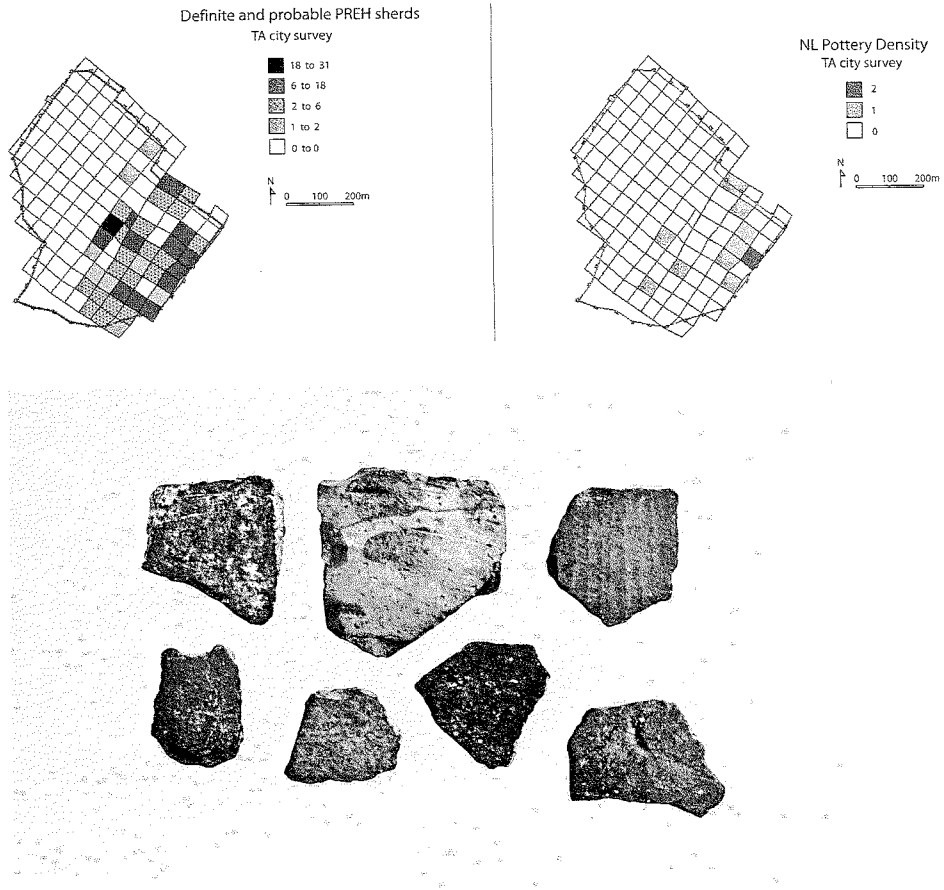

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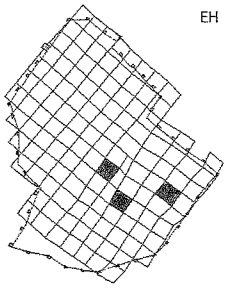
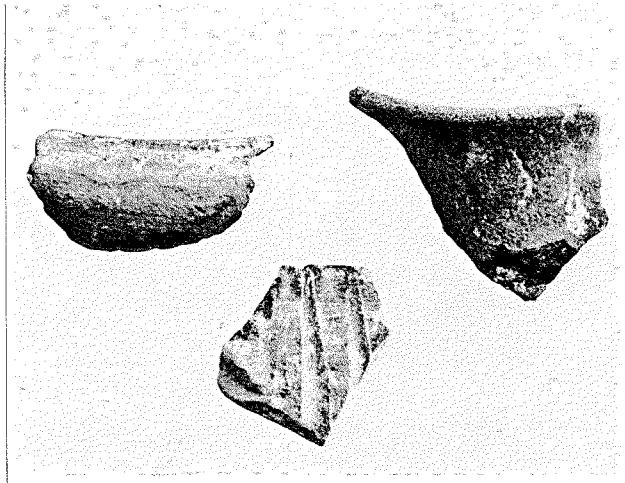
Fig. 18. — Plots across city of all Preh, N, EH, MH, LH.
19. — Neolithic sherds distribution.
20. — Neolithic sherds.





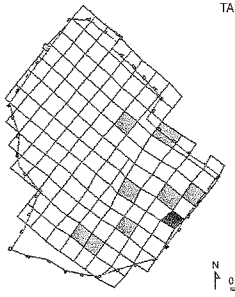


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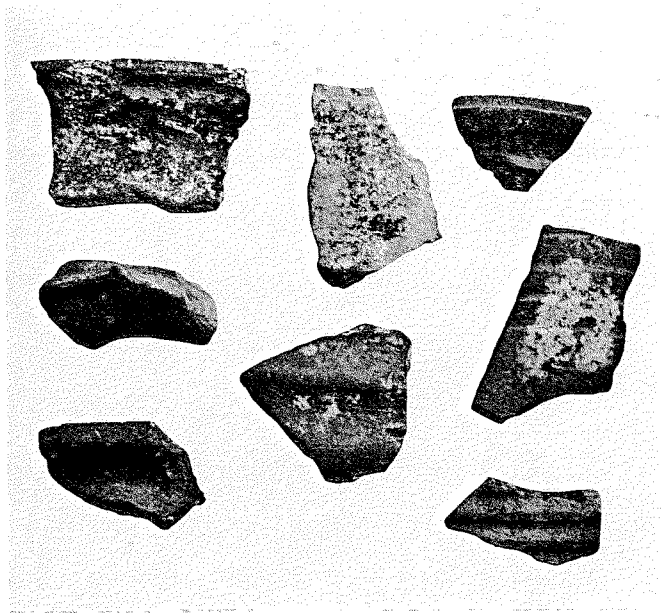
Fig. 21. — EH sherds distribution.
22. — EH sherds.
23. — MH sherds distribution.



24a
24b

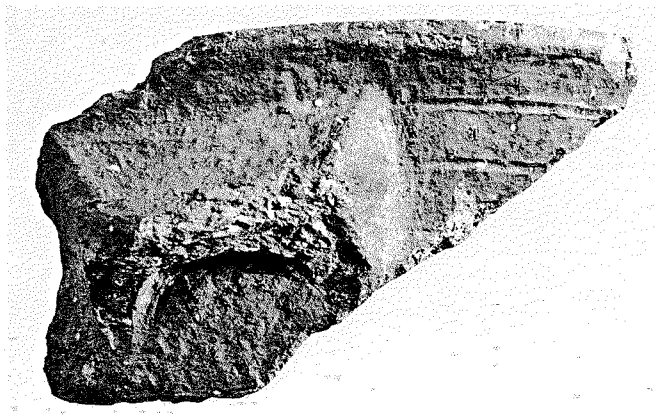
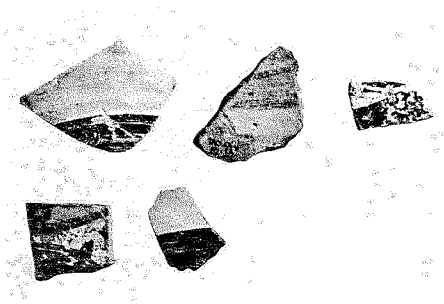
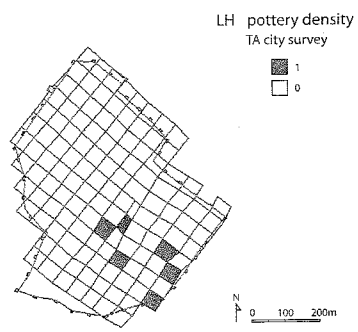
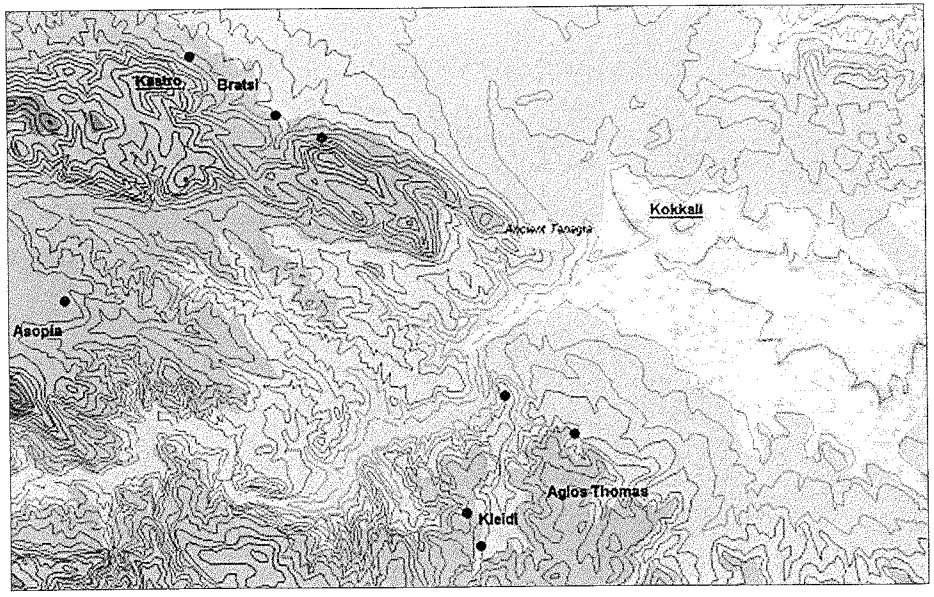


Fig. 24a. — MH sherds.
24b. — MH sherd.

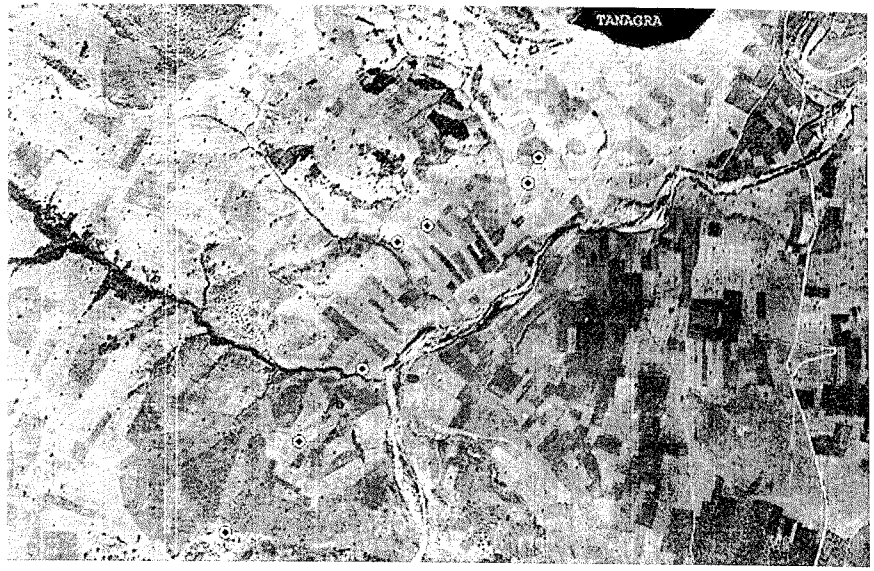






25 | 26
27

Fig. 25. — LH sherds.
26. — LH sherds distribution.
27. — Dots represent known LH cemetery site in the area.



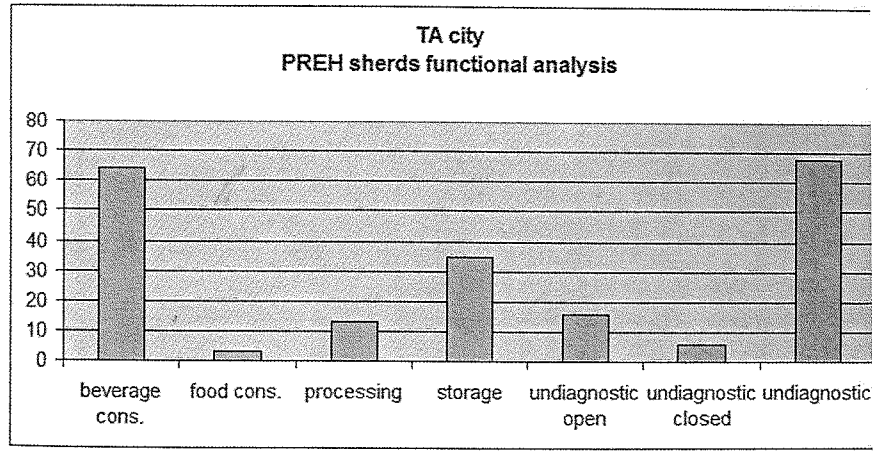
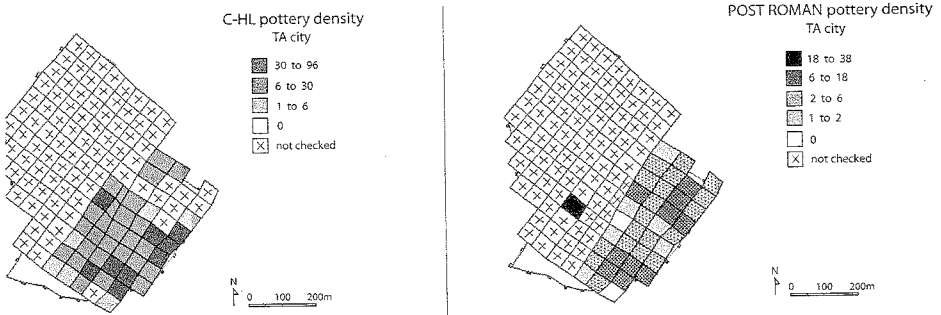
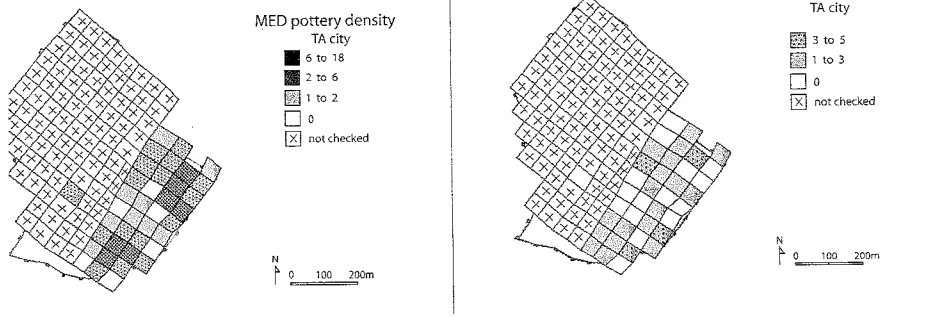


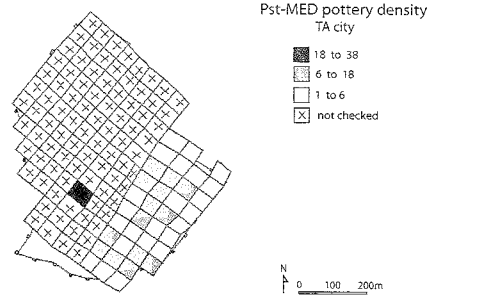
Fig. 28. — Air photo with prehistoric (mainly Neolithic) sites (black and white dots).
29. — Functional analysis of the PREH sherds from the city survey.

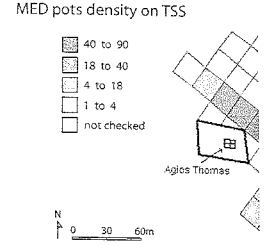


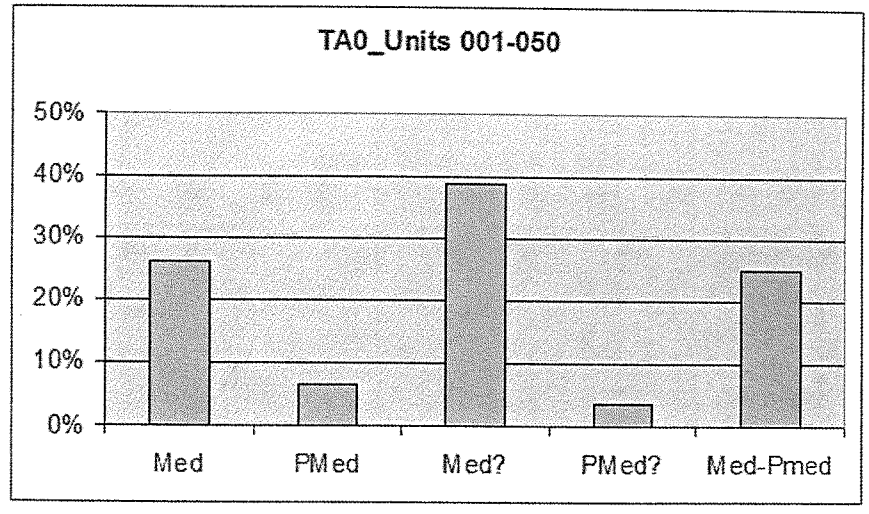


30 | 31
32 | 33

Fig. 30. — C and C-HL sherds distribution.
31. — Distribution of all Post-Roman potsherds .
32. — Overall Medieval pottery distribution (10th-14th c. AD).
33. — Overall Medieval – Post-Medieval pottery distribution (14th-16th c. AD).

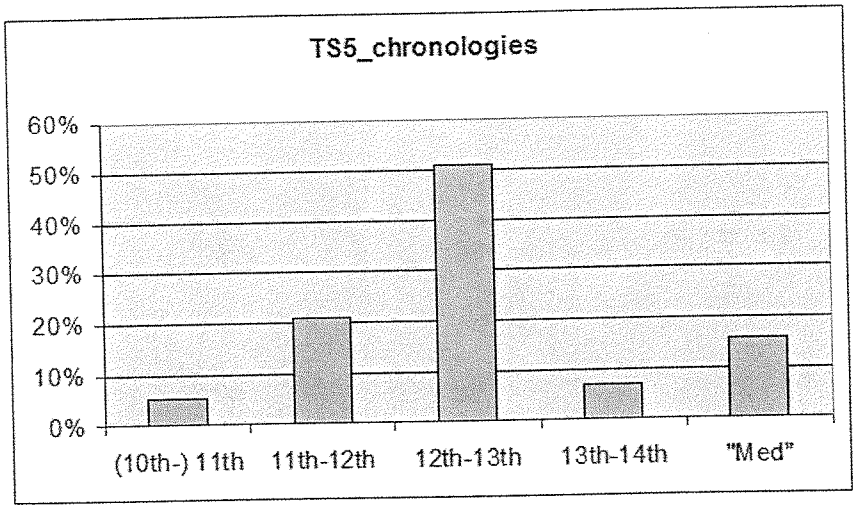






34 | 36
35

Fig. 34. — Overall Post-Medieval pottery distribution.
35. — Overall chronologies of Units 001-050.
36. — Medieval pottery distribution in site TS5 (Ayios Thomas).



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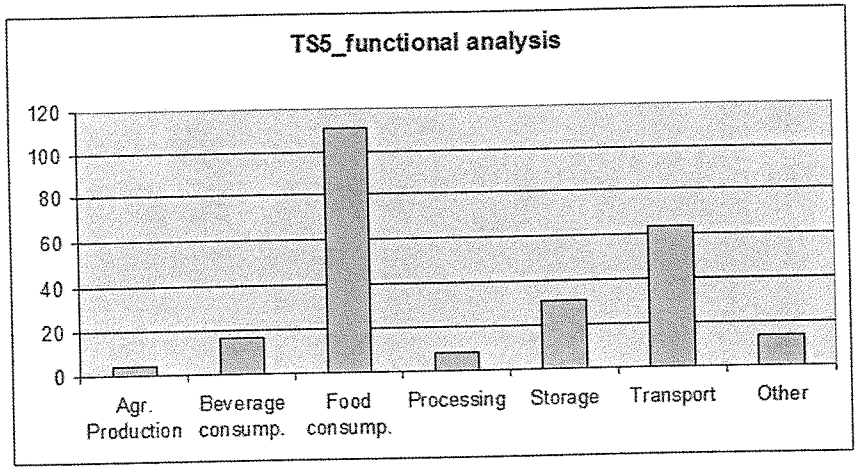
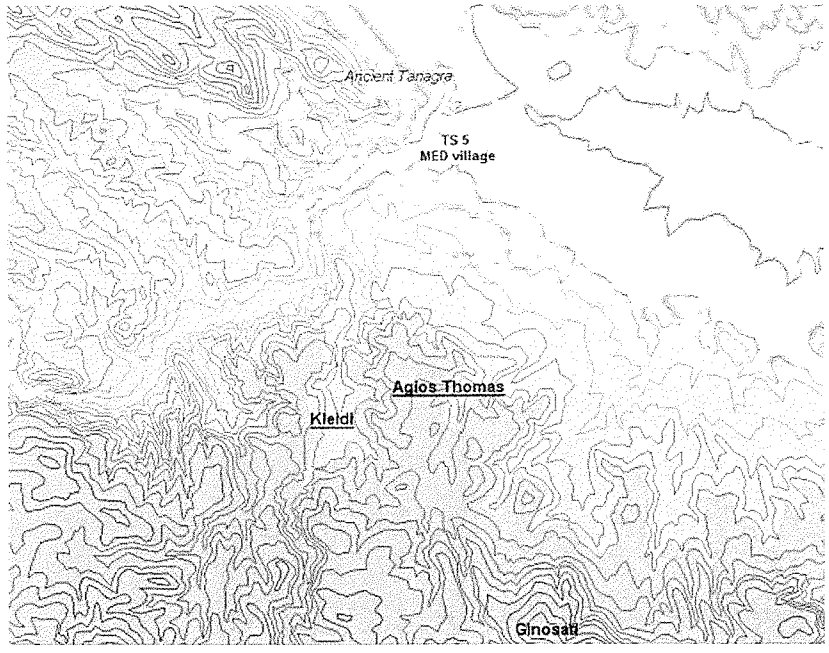


Fig. 37. — Overall chronologies of grids A-D of site TS5 (Ayios Thomas).
38. — Preliminary pottery functional analysis of site TS5.



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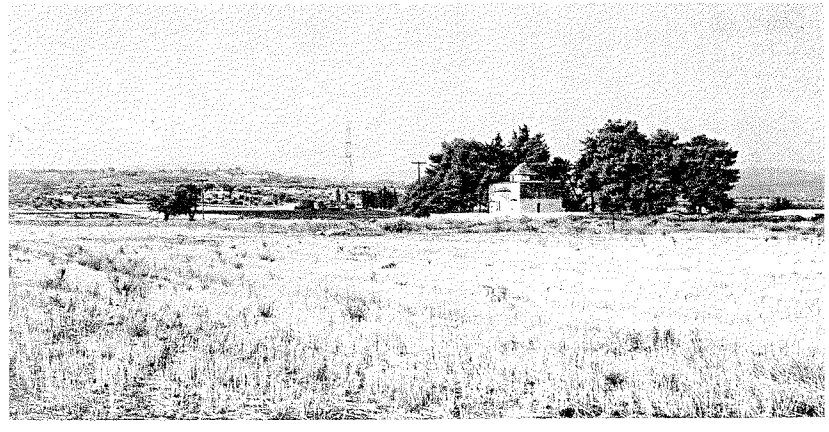
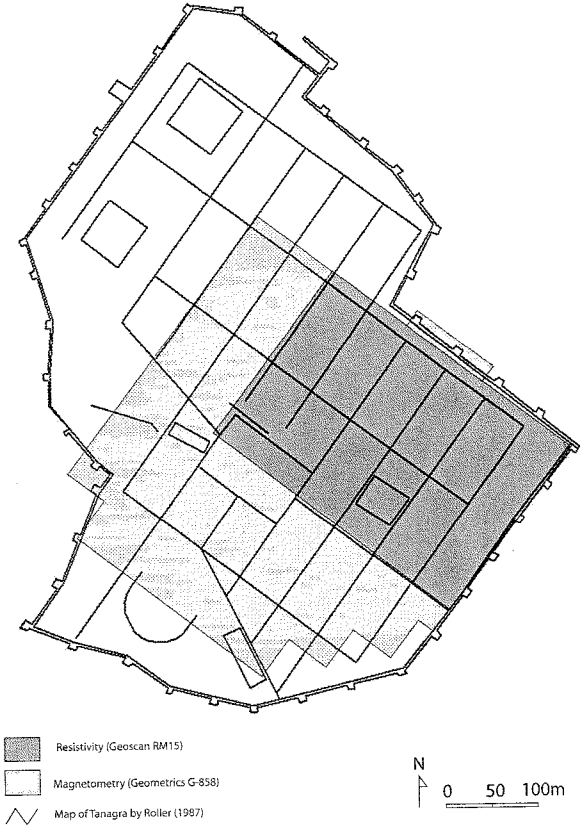
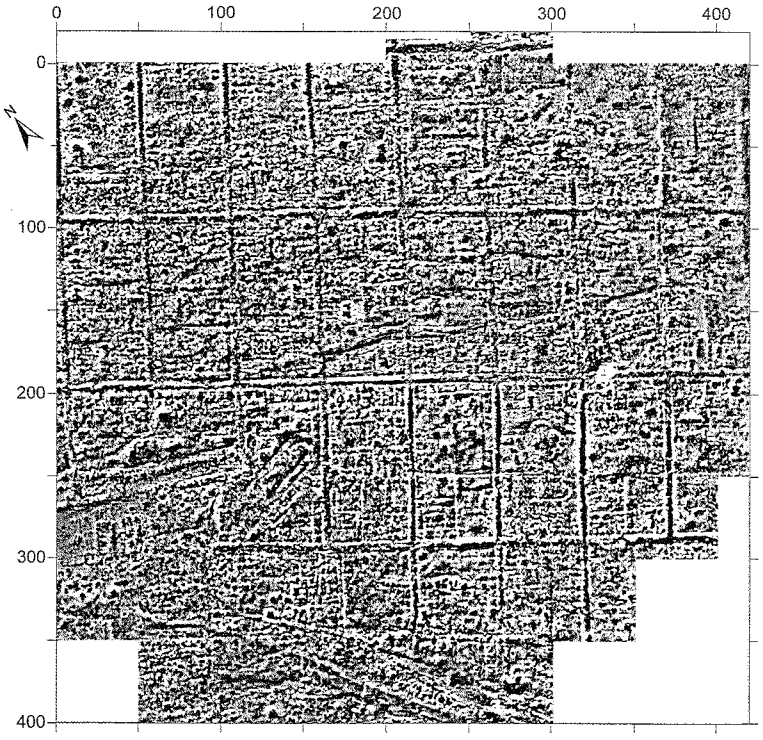


Fig. 39. — Map of *Tanagrike* with Post-Medieval and Early Modern village-names.
40. — The site of Ayios Thomas or TS5 from the NE, showing the area of medieval habitation of the site (NE of the church).



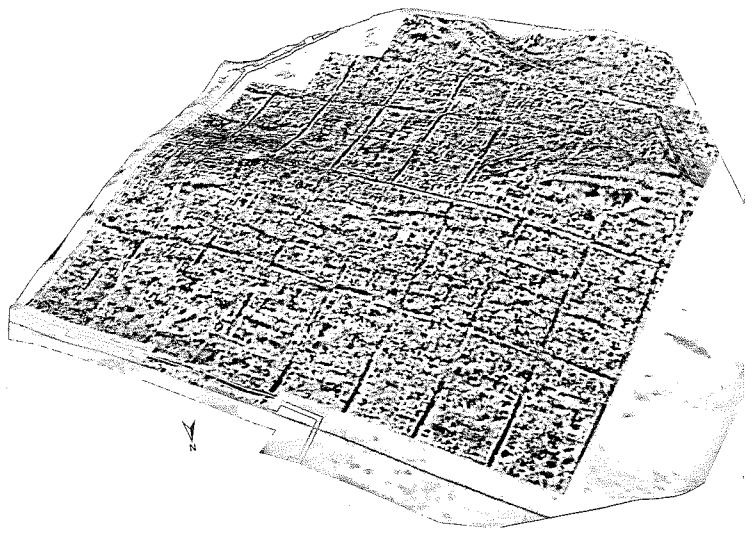
41

Fig. 41. — Area surveyed and geophysical methods applied.



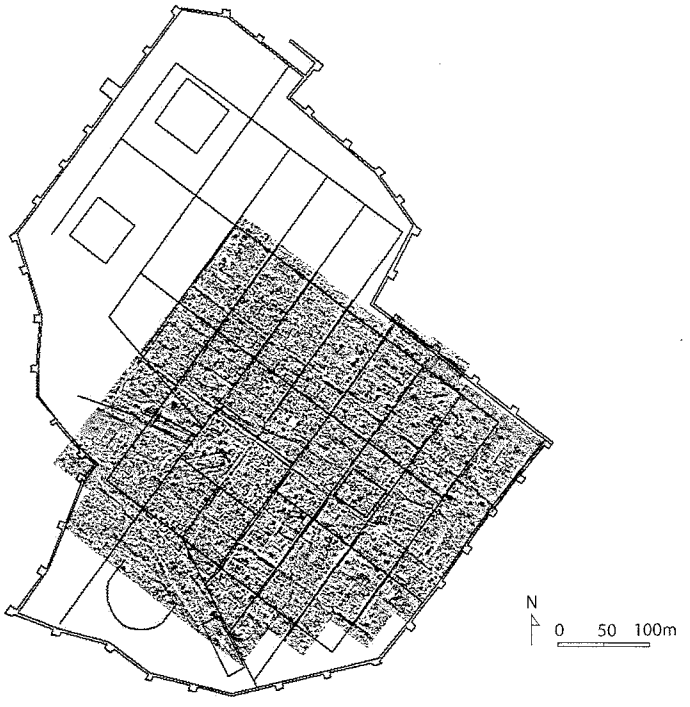
42

Fig. 42. — Vertical gradient of magnetic field mapped (Geometrics G-858).



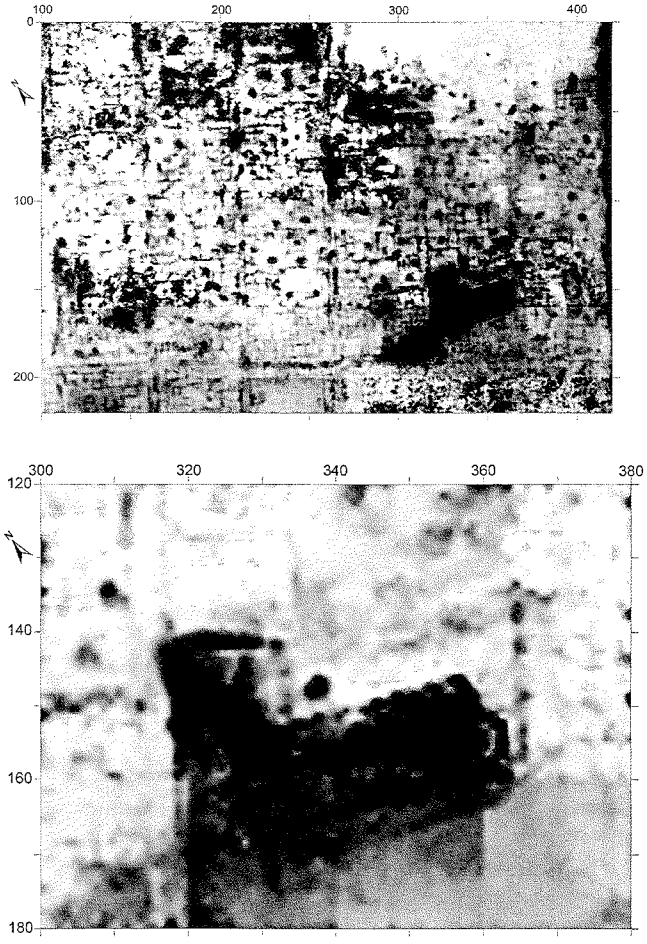
43

Fig. 43. — Vertical gradient of magnetic field against DEM (view from the North).



44

Fig. 44. — Vertical gradient of magnetic field against map by Roller.



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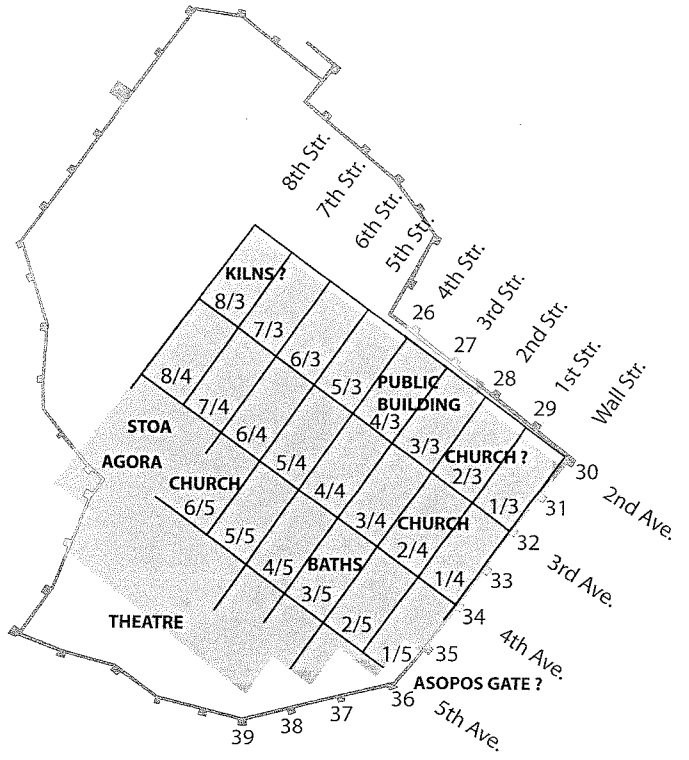
46

Fig. 45. — Geoelectric resistivity mapped (Geoscan RM15).
46. — Geoelectric resistivity map of the Early Christian church area in block 2/4.

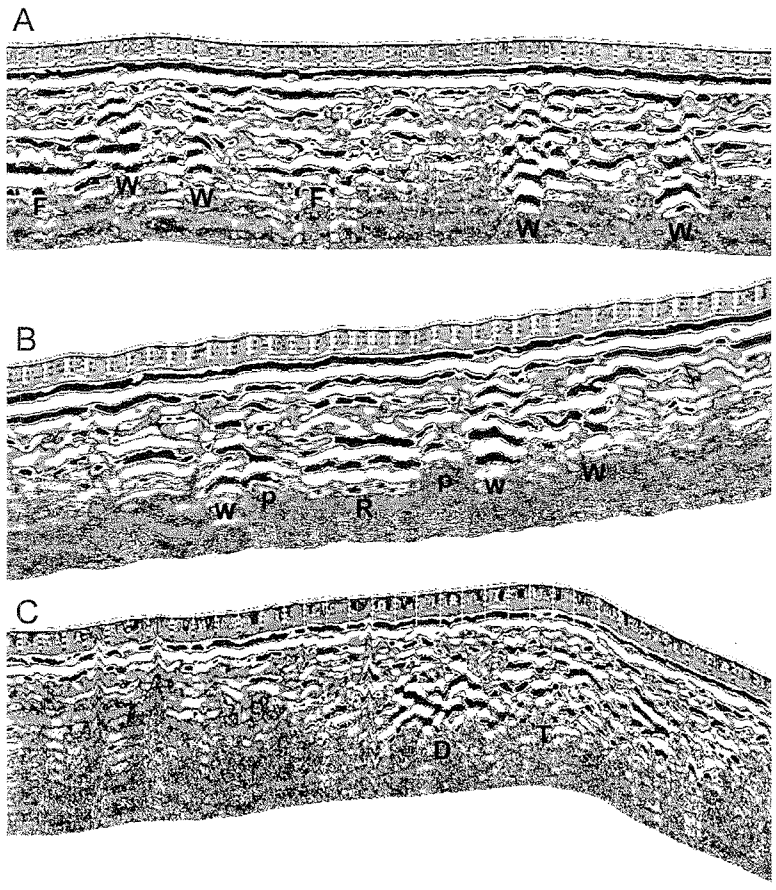


47

Fig. 47. — Outline of the new plan of Tanagra emerging from geophysics, with names and numbering as referred to in text.

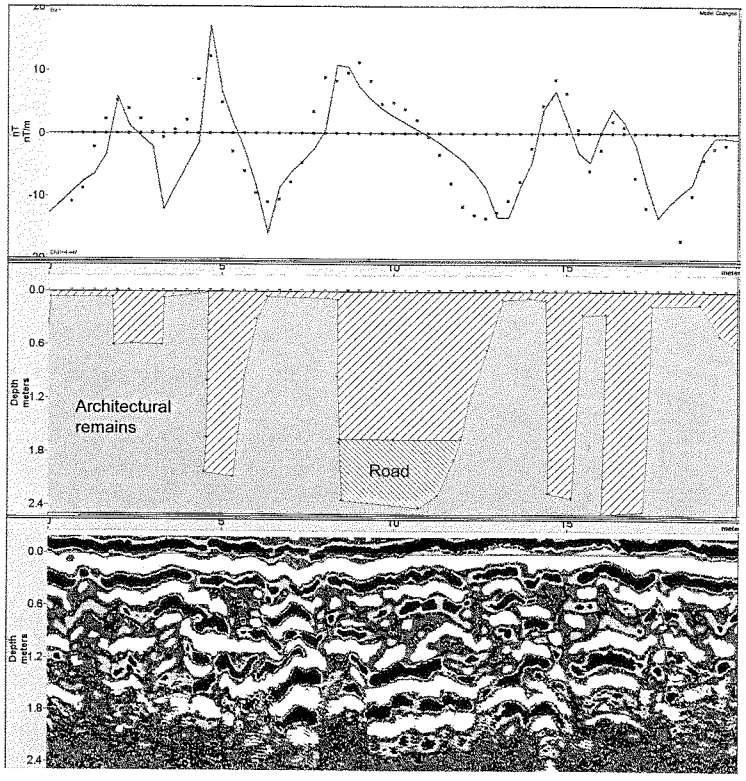
48

Fig. 48. — Position of georadar profiles presented on fig. 49, blocks 1-3/3, 1-3/4.



49

Fig. 49. — Georadar profiles A, B and C (features identified: W – wall; R – road; P – pavement; F – floor; D – city defence wall; T – tower).



50

Fig. 50. — Magnetic modelling on profile B (graph: dotted line – measured values; full line: hypothetical model).